CABLETRON SYSTEMS
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SmartSwitch 6500 Reference Manual

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1 INTRODUCTION

This reference manual describes the console commands for the SmartSwitch 6500.

Audience and Scope

The manual is intended for network administrators and others responsible for maintaining the SmartSwitch 6500.

Definitions

The manual is organized alphabetically by switch attribute.

- The definition of a switch attribute is a function that manipulates the switch in a specific way. For example: **`buselan`**
- The definition of an operator is the active verb that makes the switch attribute perform a specific task. For example: **`show`**
- The definition of a command is the combination of an operator plus a switch attribute. For example: **`show buselan`**

Note Asmall group of attributes does not require operators and can function as standalone commands. Those attributes are: **`exit`**, **`history`**, **`passwd`**, **`reboot`** and **`shutdown`**.

Content

- Chapter 2, "Console Commands," gives definitions, descriptions, and examples of all available commands on the SmartSwitch 6500.
- Chapter 3, “Boot Load Commands” gives definitions, descriptions, and examples of the low-level boot load commands.
- Appendix A, “Acronyms,” spells out the ATM acronyms used in this manual as well as those found in the SmartSwitch 6500 User Guide.
- Appendix B, “Event/Alarm Messages,” describes the format of event and alarm messages that are recorded to circular buffers and can be displayed on the console.
- Appendix C, “Technical Support,” gives instructions for contacting Cabletron by telephone, fax, electronic mail, and the World Wide Web.

Conventions

The SmartSwitch 6500 Reference Manual uses the following conventions for instructions and information:

- Information you enter (console commands and input parameters) is shown in **bold Courier 8** font and requires a space between the operator and switch attribute.
- Input and output parameters are shown in [Square Brackets].
- Input definitions are shown in <anglebrackets>, as joined text and not case sensitive.
- Filter flags <**/s**> (summary) or <**/d**> (detail) are available with certain show commands and apply to different information viewing levels. Filter flags require a space between them and the full command. For example: **show client /d**. The **/s** option is the same as the standard default option. You can find more details at the relevant switch attribute sections. For example:

```
switch_prompt # show client
ClientNumber(ALL)                        :
Client Type    IP Address      Server Type  Server Conn  Status
================================================================================
    1  LANE    90.1.1.186      LECS         Established  Operational
    3  IP/ATM  90.1.1.124      Local        Established  Operational
switch_prompt #

switch_prompt # show client /s
ClientNumber(ALL)                        :
Client Type    IP Address      Server Type  Server Conn  Status
================================================================================
    1  LANE    90.1.1.186      LECS         Established  Operational
    3  IP/ATM  90.1.1.124      Local        Established  Operational
switch_prompt #

switch_prompt # show client /d
ClientNumber(ALL)                        :
LANE Client 1
================================================================================
Client State      : Operational
Client Address    : 39:00:00:00:00:00:00:00:00:00:14:15:00:00:20:D4:14:15:00:00
LAN Name          : elan1
LECS Addr Source  : ILMI
LECS Address      : 39:00:00:00:00:00:00:00:00:00:14:15:00:00:20:D4:14:15:00:01
LES Address       : 39:00:00:00:00:00:00:00:00:00:14:15:00:00:20:D4:14:15:00:02
LAN Type          : 802.3
MTU               : 1516
IP Address        : 90.1.1.186
IP NetMask        : 255.255.255.0
IP/ATM Client 3
================================================================================
Client State      : Operational
Client Address    : 39:00:00:00:00:00:00:00:00:00:14:15:00:00:00:5A:01:01:7C:00
Server            : is local
Server Connection : Established
MTU               : 9180
IP Address        : 90.1.1.124
```

Abbreviations

Pay attention to how switch attributes appear in section headings of Chapter 2. Switch attributes are not case sensitive, but you must spell them correctly. For example, if the heading states BUSStat, you must enter **busstat** and not **busstats**.

```
switch_prompt # show busstats
Command busstats not Valid for Action show
Type  Help <command>  for help
switch_prompt #

switch_prompt # show busstat
ELANNumber(ALL)                          :
BUS ELANs
================================================================================
  ELAN ELAN000 Statistics
  Out Octets           : 0
  Out Unicast          : 0
switch_prompt #
```

You can, however, abbreviate the switch attribute to the extent it is unique. For example, instead of entering **show porttrafficcongestion**, you can just enter **show portt**. You can do the same with operators. For example, instead of entering **modify**, you can enter **mod**. You should enter at least three characters for any operator. For example:

```
switch_prompt # modify portmode
PortNumber(ALL)                          :
PortMode(SONET)                          :
switch_prompt #

switch_prompt # mod portm
PortNumber(ALL)                          :
PortMode(SONET)                          :
switch_prompt #
```

If you enter part of a command, and that part is not unique, the console displays a numbered list of possible matching commands. For example, entering **show pnnin** is ambiguous because there are several commands that start with "pnnin." In response, the SmartSwitch 6500 displays a list of possible commands:

```
switch_prompt # show pnnin
Objects beginning with pnnin for action show
0   :    PnniNeighbor
1   :    PnniNetworkLink
2   :    PnniNetworkNode
3   :    PnniNode
4   :    PnniNodeTimer
(#)Command  (Q)uit? :
```

Help Options

The console provides several levels of help for console commands. For example, to list the switch attributes that can be used with a particular operator, enter the word **help** (or **?**) followed by the operator.

```
switch_prompt # help add
HELP  ----    add
================================================================================
add         [ Alias | ATMRoute | BUSELAN | Community | ELAN | Interface |
            IPATMClient | IPATMPVC | LANEClient | LECSELAN | LECSELANLEC |
            LECSTLVSET | LESELAN | NetPrefix | PnniMetrics |
            PnniSummaryAddress | PVC | Route | ServiceRegistry |
            TrafficDescriptor | TrapCommunity ]
```

To get an explanation of a command and its parameters, enter the word **help** (or **?**) before the command.

```
switch_prompt # ? add laneclient
Create LANE Client
================================================================================
ClientNumber            Local Client Number (0-127)
LanName                 Name of the ELAN to join
ServerType              Type of LANE Server [LECS, LES]
ServerAddress           ATM Address of the LANE Server
IPAddress               IP Address of the Client
NetMask                 IP Netmask of the Client
MTU                     MTU for the Client [1516, 9234, NONE]
```

While entering a command, you can get help about an input parameter. To do so, enter a question mark (**?**) at the parameter prompt.

```
switch_prompt # add atmroute
PortNumber(A1)                          : 1a3
AtmAddress()                            : 39:00:00:00:00:00:00:00:00:00:14:72:80
PrefixLength(104)                       :
Index(0)                                :
Type(Internal)                          : ?
The type of reachability. Use Internal, Exterior, or Reject.
Type(Internal)                          : exterior
Scope(0)                                :
MetricsTag(0)                           :
Switch 4 #
```

Note Press the Esc key to back out of any command before you enter the last value.

Other Reference Options

You will find a list of acronyms, details about technical support, and an index at the back of this manual. The index contains page references for all switch attribute sections, command parameters, operators, command descriptions and command examples. There is also a table of commands at the end of this chapter. It lists all switch attributes by their operator.

See the SmartSwitch 6500 User Guide for details on how to use the switch. The user guide contains information about switch configuration, maintenance, and SNMP (simple network management protocol), as well as an overview of switch capabilities.

Switch Attribute

Each switch attribute heading is followed by a brief description of the attribute. The attribute description is followed by information on operators, parameters, command strings, and examples.

Note A small group of attributes does not require operators and can function as standalone commands. Those attributes are: **`exit`**, **`history`**, **`passwd`**, **`reboot`** and **`shutdown`**.

Operators

If an attribute requires operators, they are listed under an “Operators” heading. Following is a list of all possible switch operators. If an operator has an alias, it is shown in parenthesis.

Table 1-1 List of Operators

Operator	Action
add (create)	Adds new object
activate	Activates an existing but deactivated object
backup	Backs up switch configuration
clear	Clears (initializes to 0) properties of an object
disable	Lowers privilege level
deactivate	Deactivates an existing object
delete (remove)	Deletes existing object
enable	Raises privilege level
flush	Flushes all entries
modify (set)	Sets properties of an existing object
restart	Restarts LANE clients
restore	Restores switch configuration
setup	Sets up switch
show (display)	Shows properties of an object
start	Starts an object
stop	Stops an object
update	Upgrades firmware

Parameters

Most switch attributes have input or output parameters (or both). If an attribute has parameters, they are listed in tables under a “Parameters” heading. You enter input parameters at the console command line. You view output parameters at the console screen after the command executes. Some input parameters have default values (shown in parenthesis). You do not need to type an entry if you accept the default.

Following is an example of the format of input and output parameter tables..

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch. Specifying “All” causes all ports to be affected by this command.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), CPU or CPU.1 (for CPU ports), or All	All
[ATMAddress]	ATM address assigned to the port.	13-20 byte hex-based format separated by colons.	No default
[ClientNumber]	Number of the client. Each client on the switch must have a unique client number. Client numbers are shared between LAN emulation (LANE) and IP/ATM (IP over ATM) clients.	0 to 127, or All	All
[InterfaceType]	Interface type advertised by the port.	Private, Public	Private
[SigRole]	Signaling role of the port. Other is used only for autoConfig and pnni10.	Network, Other, User	Other

In the output parameter table below, **</d>** indicates parameters available only in detailed display mode. To view the display for these parameters, type **`/d`** after the attribute in the command string (for example: **`operator attribute /d`**).

Output Parameter	Description
[Port ID]	Same as the [PortNumber] input parameter.
[Intf Type]	Same as the [InterfaceType] input parameter.
[LES Address]	ATM address of the LANE server.
[Sig Role] **</d>**	Signaling role of the port.
[Client Address] **</d>**	ATM address of the client.

Descriptions

A “Descriptions” section follows parameters. The descriptions section shows command syntax (operator, attribute, and input parameters). It also gives additional information on what the command does and how to use it. Finally, the descriptions section indicates the privilege level required to use the command (Read Only, Administrator, or All). Administrator privilege level is necessary for actions other than viewing output displays. All means any user has complete access to command features..

Operator	Parameters/Permissions	Description
show clientvc	[ClientNumber] **<clientnumber>** All	Displays client ARP mapping details. In addition, it displays VC details for local IP/ATM or LANE clients. For IP/ATM, the associated IP address appears; for LANE, the associated MAC address appears. (The associated address is what is located at the other end of the VC.)

Examples

Examples are copied exactly from the switch console. They show how you must enter console commands at the switch prompt (for example: **`modify buselan`**). The other bold text (**`1`**, **`103`**, **`pvc`**, **`802.5`**, **`4544`**) is input parameter values. Text in brackets immediately following each parameter field indicates the current default (for example: `ELANType(802.3)`).

```
switch_prompt #  modify buselan  (console command)
ELANNumber(0)         :103       (input entry)
ELANName(ELAN102)     :elan103   (input entry)
ConnectMethod(SVC)    :pvc       (input entry)
ELANType(802.3)       :802.5     (input entry)
Multipoint(YES)       :          (accept default)
MTU(1516)             :4544      (input entry)
switch_prompt #

switch_prompt # show buselan
ELANNumber : 103

ELAN : elan103
ELAN Number       : 103
ELAN Name         : elan103
ATM Address       : 39:00:00:00:00:00:00:00:20:D4:14:15:00:00:20:D4:14:15:66:02
Max Frame Size    : 4544
Connection Method : PVC
Distribute VPI/VCI: 0/50
LAN Type          : 802.5
Multipoint        : YES
```

List of Operators and Possible Switch Attributes

Following is a list of switch attributes that are used with operators. If an operator has an alias, the alias is shown in parenthesis.

Note A small group of attributes does not require operators and can function as standalone commands. Those attributes are: **`exit`**, **`history`**, **`passwd`**, **`reboot`** and **`shutdown`**.

add (create)

Alias	ATMRoute	BUSELAN	Community
ELAN	IPATMClient	IPATMPVC	LANEClient
LECSELAN	LECSELANLEC	LECSELANNameTable	LECSELANPolicy
LECSELANPacketSizes	LECSTLVSET	LESELAN	NetPrefix
PnniMetrics	PnniNode	PnniSummaryAddress	PnniTnsRoute
Port	PVC	PVP	Route
ServiceRegistry	TrafficDescriptor	TrapCommunity	

delete (remove)

Alarms	Alias	ATMRoute	BUSClient
BUSELAN	Client	Community	ELAN
Events	IPATMPVC	LECSELAN	LECSELANLEC
LECSELANNameTable	LECSELANPolicy	LECSErrorLog	LECSPacketSizes
LECSTLVPARAM	LECSTLVSET	LESClient	LESELAN
NetPrefix	PnniMetrics	PnniNode	PnniSummaryAddress

delete (remove) Continued

PnniTnsRoute	Port	PVC	PVCById
PVP	PVPById	Route	ServiceRegistry
TrafficDescriptor	TrapCommunity		

modify (set)

622LoopBack	AlarmDisplay	Alias	BUSELAN
BUSType	CACEqBwAllocScheme	CACServiceClassBw	ConsoleTimeout
CoreDump	DS3E3LoopBack	EventDisplay	IlmiConfig
IPAddress	IPATMClient	LANEClient	LECSELAN
LECSELANLEC	LECSELANPolicy	LECSErrorLogControl	LECSTLVSet
LESELAN	MyNmAddr	NetworkClock	PnniInterface
PnniNode	PnniNodeTimer	PnniPeerGroupId	PnniPglElection
PnniScopeMapping	PortClockMode	PortConfig	PortMode
PortTrafficCongestion	Prompt	RedundancyInfo	Rows
SigTimer	SSCOPConfig	SwitchConfig	SwitchName
SwitchTrafficCongestion	TrustedNMS		

show (display)

622LoopBack	AlarmDisplay	Alarms	Alias
ATMRoute	BUSClient	BUSELAN	BUSErrorLog
BUSLECStat	BUSStat	CACEqBwAllocScheme	CACInfo
CACPortBw	CACServiceClassBw	CACStatistics	Client
ClientARP	ClientStat	ClientVC	Community
ConsoleTimeout	CoreDump	DS3E3LoopBack	ELAN
EventDisplay	Events	IlmiConfig	IPATMARP
IPATMPVC	IPATMStats	LECMcast	LECS
LECSELAN	LECSELANLEC	LECSELANNameTable	LECSELANPolicy
LECSErrorLog	LECSErrorLogControl	LECSPacketSizes	LECSStats
LECSTLVSet	LECSVcc	LES	LESARP
LESClient	LESELAN	LESErrorLog	LESLECStat
LESStat	McastClients	MinMaxTableIndex	MyNmAddr
NetPrefix	NetworkClock	PnniInterface	PnniLink
PnniMetrics	PnniNeighbor	PnniNetworkLink	PnniNetworkNode
PnniNode	PnniNodeTimer	PnniPglElection	PnniPtse
PnniReachableAddress	PnniScopeMapping	PnniStats	PnniSummaryAddress
PnniSvccRcc	PnniTnsRoute	PortClockMode	PortConfig
PortMode	PortStats	PortTrafficCongestion	Privilege
PVC	PVP	RedundancyInfo	Route
SARStats	ServiceRegistry	SigStatistics	SigTimer

show (display) Continued

SlotConfig	SSCOPConfig	SSCOPStatistics	SVC
SlotConfig	SSCOPConfig	SwitchTrafficCongestion	TrafficDescriptor
TrapCommunity	TrustedNMS	VlanMcast	

activate/deactivate

Client	PVC	PVCById	PVP
PVPById			

backup/restore

Switch

clear

Alias	BUSErrorLog	BUSStat	CACStatistics
Config	LESErrorLog	LESStat	PortStats
PVC	PVP		

disable/enable

Privilege

execute

CpuSwitchover	RedundancyConfigBackup

flush

Alias	Config	PVC	PVP

restart

Client

setup

Switch

start

LECS	LES	Ping

stop

LECS	LES

update

Firmware

2 CONSOLE COMMANDS

622LoopBack

Use 622LoopBack to set or display loopback on 622 Mbps (OC-12/STM-4) ports.

Note A port in loopback mode does not pass normal traffic.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4	No default
[Loopback]	Loopback mode (see Table 2-1).	None, Facility, Equipment, Diag	None

Output Parameter	Description
[PortNumber]	Physical port number on the switch.
[Type]	Type of port.
[Loopback]	Loopback mode. Possible values are None, Facility, Equipment, or Diag (see Table 2-1).

Descriptions

Operator	Parameters/Permissions	Description
modify 622loopback	[Port] **<port>** [Loopback] **<loopback>** Administrator	Sets loopback for 622 Mbps ports.
show 622loopback	Administrator	Shows loopback status for 622 Mbps ports.

Table 2-1 OC-12/STM-4 Port Loopback Modes

Mode	Description
None	Loopback is not enabled.
Facility	The data stream is received from the network, has the overhead bits reinserted, and is retransmitted back to the network.
Equipment	Connects the transmitter to the receiver. The data stream received from the line is retransmitted back out the line. Cells generated by the switch to this port are not sent over the line.
Diag	Connects the receiver to the transmitter. The data stream transmitted by the switch to a port is looped back to the switch.

Examples

```
switch_1 # show 622loopback
Port(ALL)                                 :
 Port      Type   Loopback
================================================================================
1A1        622    None

switch_1 # set 622loopback
Port()                                    : 1a1
Loopback(None)                            : Facility


switch_1 # show 622loopback
Port(ALL)                                 :
 Port      Type   Loopback
================================================================================
1A1        622    Facility

switch_1 #
```

AlarmDisplay

Use AlarmDisplay to enable/disable the display of alarm messages at the console.

Note Use Alarms to display the alarms currently logged.

Operators

`modify, show`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[AlarmDisplay]	Toggles the display On or Off.	On, Off	

Descriptions

Operator	Parameters/Permissions	Description
`modify alarmdisplay`	`[AlarmDisplay]` **`<alarmdisplay>`** Administrator	Toggles display of alarm messages on the console screen.
`show alarmdisplay`	Administrator	Displays status of alarms display.

Examples

```
switch_prompt # show alarmdisplay
Alarm Display is OFF

switch_prompt #

switch_prompt # modify alarmdisplay
AlarmDisplay[OFF]  : on

switch_prompt #

switch_prompt # show alarmdisplay
Alarm Display is ON

switch_prompt #
```

Alarms

Use Alarms to display or delete alarms currently logged.

Note Up to 40 alarms are persistent on reboot (remain in log). No events are persistent on reboot.

Operators

`delete, show`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[Index]	The index(es) of the alarms you want to display or delete.	Positive integer or All	All

Descriptions

Operator	Parameters/Permissions	Description
`delete alarms`	`[Index]` **`<index>`** Administrator	Deletes an alarm or all alarms.
`show alarms`	`[Index]` **`<index>`** All	Displays alarm(s) currently logged. Alarm information includes message index number, alarm ID, message text, severity, and a timestamp (time the alarm occurred, with respect to switch up-time in hours, minutes, seconds, and milliseconds).

Examples

```
switch_prompt # show alarms
Index(ALL)                              :
0  33554652  000:00:32:238
-------------------------------------------------
LECS Operational

switch_1 # delete alarms
Index(ALL)                              :

switch_1 # show alarms
Index(ALL)                              :
```

Alias

Use Alias to manage aliases for console commands. You can use up to 15 aliases.

Note The alias **`ping`** is present when the switch is shipped from the factory (**`ping`** is an alias for **`start ping`**).

Operators

`add, delete, flush, modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[AliasName]	Alias name.	Single word (no spaces) of alphanumeric characters.	No default
[AliasedString]	Console command to which alias applies.	Any valid combination of operator and attribute (for example, **`show events`**). The aliased string may not contain another alias.	No default

Output Parameter	Description
[Index]	Sequence number assigned to alias by console.
[Alias Name]	Same as the [AliasName] input parameter.
[Aliased Command]	Same as the [AliasedString] input parameter.

Descriptions

Operator	Parameters/Permissions	Description
add alias	[AliasName] **<aliasname>** [AliasedString] **<aliasedstring>** Administrator	Creates an alias. You can have up to 15 active aliases (including **ping**).
delete alias	[AliasName] **<aliasname>** Administrator	Deletes an alias.
flush alias	Administrator	Deletes all aliases (including **ping**).
modify alias	[AliasName] **<aliasname>** [NewAliasedString] **<newaliasedsring>** Administrator	Changes an alias.
show alias	[AliasName] **<aliasname>** Administrator	Displays all aliases.

Examples

```
switch_prompt # add alias
AliasName()                              : spnni
AliasedString()                          : show pnniinterface

switch_prompt #

switch prompt # delete alias
AliasName()                              : spnni
 spnni  -> show pnniinterface
Confirm(y/n)?:y

switch_prompt #

switch_prompt # flush alias
You are about to delete all aliases

Confirm(y/n)?:y

switch_prompt #

switch_prompt # modify alias
AliasName()                              : spnni
NewAliasedString()                       : sp
Modifying Alias "spnni -> show pnniinterface" to "spnni -> sp"

Confirm(y/n)?:y

switch_prompt #
```

```
switch_prompt # show alias
AliasName(ALL)                          :
Alias List
================================================================================
Index Alias Name                       : Aliased Command
 1     PING                            : Start Ping
 2     sp                              : show pnninode

switch_prompt #
```

ATMRoute

Use ATMRoute to manage routes to reachable addresses from the switch.

Note You can hot-swap TSMs. Hot-swapping is replacing a module when the chassis is powered up. If you replace a TSM with another TSM of the same type (same I/O ports), existing configuration of port parameters is not affected. This includes parameters set using any of the following attributes: ATMRoute, CACServiceClassBw, IlmiConfig, NetPrefix, Port, PortConfig, PVC, PVP, ServiceRegistry, SigTimer, SigStatistics, SSCOPConfig, and SSCOPStatistics. If you replace a TSM with another TSM of a different type, existing configuration of port parameters is deleted. The deletion occurs when the new module is plugged into the chassis backplane.

Operators

`add, delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[Num]	Index number of the route as assigned by the console. Use the **`show atmroute all`** command to get a list of index numbers.	Positive integer	All
[PortNumber]	Port number on the switch.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), or All	All
[AtmAddr]	Address prefix of the ATM end system.		No default
[PrefixLength]	Length in bits to apply to the address prefix.		No default
[AddressIndex]	Index into the set of listings of connectivity to the address prefix.		0
[Type]	Type of reachability from the switch to the address prefix.	Exterior, Internal, Reject	Internal

Input Parameter	Description	Value/Field Size	Default
[Scope]	PNNI scope of advertisement (level of PNNI hierarchy) from the switch to the address prefix.	Integers from 0-104	0
[MetricsTag]	Index into listing of traffic parameters that apply to connectivity from the switch to the address prefix. If there are no parameters associated with this address prefix, then zero is used.		0
[Advertising]	Whether or not the local switch should advertise the address into the PNNI domain. For example, use Yes for an end station address and No for an IISP route.	Yes, No	No

Note If you hot-swap a TSM with a TSM of a different type (different I/O ports), routing information associated with ports on the original TSM is deleted. Before you insert a replacement TSM, you can display existing routing information using the **show** operator with the **/o** option (for example: **show atmroute /o**).

Output Parameter	Description
[Num]	Index number of the route as assigned by the console.
[Port]	Same as [PortNumber] input parameter.
[ATM Address]	Same as [ATMAddr] input parameter.
[Protocol]	Routing mechanism used to determine connectivity between the switch and the reachable address prefix. Possible values are Other, Local, Mgmt, and PNNI.
[Advertising Node Id]	Identifier of the node advertising reachability to the address prefix.
[Advertising Port Id]	Identifier of the port used from the advertising node to reach the given address prefix.

Output Parameter	Description
[PNNI Scope]	PNNI scope of advertisement (level of PNNI hierarchy) of reachability from the switch to the address prefix.
[VP Capability]	Indicates whether or not VPCs can be established from the advertising node to the reachable address prefix.
[Metrics Tag]	Index into the listing of traffic parameter values that apply for connectivity between the switch and the reachable address prefix.
[Ptse Id]	For reachable addresses learned through PNNI, this parameter contains the value of the PTSE identifier for the PTSE that is originated by the originating node and contains the information group(s) describing the reachable address. For reachable addresses learned by means other than PNNI, this parameter is set to zero.
[Advertising]	Whether or not the local switch advertises the local address into the PNNI domain. Possible values are: Yes and No.
[Oper Status]	Whether or not the reachable address prefix is operationally valid and whether it is advertised by this node. Possible values are: Advertised, Active, and Inactive.

Descriptions

Operator	Parameters/Permissions	Description
add atmroute	[PortNumber] **<portnumber>** [ATMAddr] **<atmaddress>** [PrefixLength] **<prefixlength>** [AddressIndex] **<addressindex>** [Type] **<type>** [Scope] **<scope>** [MetricsTag] **<metricstag>** Administrator	Adds a route to a reachable address from the switch.
delete atmroute	[PortNumber] **<portnumber>** [ATMAddr] **<atmaddress>** [PrefixLength] **<prefixlength>** [AddressIndex] **<index>** Administrator	Deletes a route to a reachable address from the switch.
show atmroute	All	Displays the configured routes from the switch.

Examples

```
switch_prompt # show atmroute
Num(ALL)                                :

Num  Port Number ATM Address                                              Type Proto
=========================================================================================
1    CPU         39:00:00:00:00:00:00:00:00:00:a3:87:0b:00:00:1d:a3:87:0b I MGMT
2    CPU         39:00:00:00:00:00:00:00:00:00:a3:87:0b:00:00:64:01:01:16 I MGMT
3    --          39:00:00:00:00:00:00:00:00:00:a3:87:0b:00:20:d4:28:c1:ff I MGMT
4    CPU         47:00:79:00:00:00:00:00:00:00:00:00:00:a0:3e:00:00:01 I MGMT

switch_prompt #

switch_prompt # add atmroute
PortNumber()                            : 7a3
AtmAddress()                            : 20:01:02:03
PrefixLength(32)                        :
AddressIndex(0)                         :
Type(Internal)                          :
Scope(0)                                :
MetricsTag(0)                           :
Advertising(NO)                         :

switch_prompt # show atmroute
Num(ALL)                                :

Num  Port Number ATM Address                                              Type Proto
=========================================================================================
1    7A3         20:01:02:03                                                 I MGMT
2    CPU         39:00:00:00:00:00:00:00:00:00:a3:87:0b:00:00:1d:a3:87:0b I MGMT
3    CPU         39:00:00:00:00:00:00:00:00:00:a3:87:0b:00:00:64:01:01:16 I MGMT
4    --          39:00:00:00:00:00:00:00:00:00:a3:87:0b:00:20:d4:28:c1:ff I MGMT
5    CPU         47:00:79:00:00:00:00:00:00:00:00:00:00:a0:3e:00:00:01 I MGMT

switch_prompt # delete atmroute
AtmAddress()                            : 20:01:02:03
PrefixLength(32)                        :
AddressIndex(0)                         :

Route Address Num 0
=========================================================================================
Node Index      : 1
Port Number     : 7A3
ATM Address     : 20:01:02:03:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00
Prefix Length   : 32
Address Index   : 0
Advertising Node: 50:a0:39:00:00:00:00:00:00:00:00:00:a3:87:0b:00:20:d4:28:c1:ff
:00
Advert Port Id  : 29634560
Type            : Internal
Protocol        : MGMT
PNNI Scope      : 0
VP Capability   : False
Metrics Tag     : 0
Ptse Id         : 0
Advertising     : No
Oper Status     : Active

The ATM route was deleted successfully.

switch_prompt #
```

BUSClient

Use BUSClient to display or delete LANE clients connected to a BUS. Each LANE client is identified uniquely by its LEC ID.

Operators

`delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	Number of the ELAN to which the BUS belongs.	0-125	0
[LECId]	LEC ID of the specified client.	1-65279	0
[ATMAddress]	ATM address of the client.		No default

Output Parameter	Description
[LECId]	LEC identification number of the specified client.
[VPI/VCI]	VPI/VCI (virtual path/channel identifier) values of control direct VCC (virtual channel connection) or multicast send VCC.
[ATM Address]	ATM address of the client.

Descriptions

Operator	Parameters/Permissions	Description
delete busclient	[ELANNumber] **<elannumber>** [LecID] **<lecidvalue>** Administrator	Removes a specified client from the BUS on the specified ELAN.
show busclient	[ELANNumber] **<elannumber>** All	Displays information about all clients that have joined the BUS on the specified ELAN.

Examples

```
switch_prompt # delete busclient
ELANNumber(0) :
LECId(0)      : 14
ATMAddress    : 39:00:00:00:00:00:00:00:20:D4:14:11:80:00:20:D4:00:D6:C0:00
Confirm(y/n)? : y
switch_prompt #

switch_prompt # show busclient 0

 Client table entries for ELAN  ELAN000

================================================================================

LECId         : 1
VPI/VCI       : 0/219
ATM Address   : 39:00:00:00:00:00:00:00:20:D4:14:2F:00:00:20:D4:14:2F:00:00
switch_prompt #
```

BUSErrorLog

Use BUSErrorLog to display or clear the BUS error log associated with an ELAN.

Note Use the **`add buselan`** or **`modify buselan`** commands to enable or disable the BUS error log for a specified ELAN.

Operators

`clear, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	The number of the ELAN whose BUS errors are to be shown or deleted.	0-125	All

Output Parameter	Description
[ATM Address]	ATM address associated with the error.
[ErrorCode]	Decimal code that shows why the error occurred (see Table 2-2).
[SysUpTime]	Time the error occurred with respect to switch up-time in hours, minutes, and seconds.

Descriptions

Operator	Parameters/Permissions	Description
`delete buserrorlog`	`[ELANNumber]` **`<elannumber>`** Administrator	Clears the BUS error log.
`show buserrorlog`	Administrator	Displays the BUS error log.

Table 2-2 BUSErrorLog Error Codes

Code	Name	Meaning
0	Success	Successful response.
1	Insufficient resources to grant request	Responder is unable to grant request for reasons such as insufficient table space or ability to establish VCCs.
2	Bad control frame	Malformed control frame or bad control request.
3	Bad data frame	Malformed data frame (too big or too small).
4	Others	All other events.

Examples

```
switch prompt # show buserrorlog
ELANNumber(ALL)                       : 1

Error Log Entries for VLAN : 1

ATM Address                                ErrorCode  SysUpTime

39:1:2:3:4:5:6:7:8:9:0:1:2:3:4:5:6:7:8:9  22         01:02:03

switch prompt # clear buserrorlog
ELANNumber(ALL)                       : 1

Clear BUS ELAN  1  Error Log

Confirm (Y/N)  :  Y

switch prompt # show buserrorlog
ELANNumber(ALL)                       : 1

Error Log Entries for VLAN : 0

switch prompt #
```

BUSELAN

Use BUSELAN to manage characteristics of a BUS for a specified ELAN. If an LES corresponding to the BUS exists, the characteristics of the BUS should match those of the LES.

Operators

`add, delete, modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	Number of the ELAN to which the BUS belongs.	0-125 or All	All
[ELANName]	Name of the ELAN to which the BUS belongs.	Up to 32 characters	
[ConnectMethod]	Type of connection used.	PVC, SVC	SVC
[ELANType]	Data-link type used by the ELAN.	802.3 (Ethernet), 802.5 (TokenRing)	802.3
[Multipoint]	Indicates whether control distribute VCC is PMP (point-to-multipoint) or PTP (point-to-point).	Yes: VCC is PMP No: VCC is PTP	Yes
[MTU]	Maximum transfer unit assigned for this client.	1516, 1580, 4544, or 9234	1516
[ErrorLogEnable]	Whether or not BUS error log is enabled.	Yes, No	No
[MinimumTDEnable]	Whether or not minimum acceptable traffic descriptor negotiation is enabled.	Yes, No	No
[ForwardPeakCellRate]	Minimum forward peak cell rate.	Positive integer	

Output Parameter	Description
[ELAN Number]	Number of the ELAN to which the BUS belongs.
[ELAN Name]	Name of the ELAN to which the BUS belongs.
[ATM Address]	ATM address of the ELAN.
[Max Frame Size]	Maximum transfer unit assigned for this client. (Same as the [MTU] input parameter.)
[Connection Method]	Type of connection used. (Same as the [ConnectMethod] input parameter.)
[Distribute VPI/VCI]	VPI/VCI values of control direct VCC or multicast send VCC.
[ELAN Type]	Data-link type used by the ELAN.
[Multipoint]	Indicates whether control distribute VCC is PMP (point-to-multipoint) or PTP (point-to-point).
[Error Logging]	Whether or not BUS error log is enabled.
[Min TD Negotiation]	Whether or not minimum TD negotiation is enabled.

Descriptions

Operator	Parameters/Permissions	Description
add buselan	[ELANNumber] **<elannumber>** [ELANName] **<elanname>** [ConnectMethod] **<connectmethod>** [ELANType] **<elantype** [Multipoint] **<distributevcctpe>** [MTU] **<maximumframesize>** [ErrorLogEnable] **<errorlogenable>** [MinimumTDEnable] **<minimumtdenable>** [ForwardPeakCellRate] **<forwardpeakcellrate>** Administrator	Creates a BUS on a specified ELAN. If the corresponding LESELAN exists, then the added BUSELAN should have similar characteristics.
delete buselan	[ELANNumber] **<elannumber>** Administrator	Removes the BUS from a specified ELAN and drops clients connected to it.

Operator	Parameters/Permissions	Description
modify buselan	[ELANNumber] **<elannumber>** [ELANName] **<elanname>** [ConnectMethod] **<connectmethod>** [ELANType] **<elantype>** [Multipoint] **<distributevcctpe>** [MTU] **<maximumframesize>** [ErrorLogEnable] **<errorlogenable>** [MinimumTDEnable] **<minimumtdenable>** [ForwardPeakCellRate] **<forwardpeakcellrate>** Administrator	Changes the behavior of the BUS parameters for a specified ELAN. The specified ELAN is then deleted and recreated. If the corresponding LESELAN exists, then the modified BUSELAN should have the same characteristics as that existing LESELAN because their parameters need to match.
show buselan	[ELANNumber] **<elannumber>** All	Displays the BUS parameters for the specified ELAN. Enter **show buselan** to confirm that changes you made.

Examples

```
switch_prompt # add buselan
ELANNumber(0)                          : 102
ELANName(ELAN102)                      :
ConnectMethod(SVC)                     :
ELANType(802.3)                        :
Multipoint(YES)                        :
MTU(1516)                              :
ErrorLogEnable(NO)                     :
MinimumTDEnable(NO)                    :
ForwardPeakCellRate()                  :

switch_prompt #

switch_prompt # delete buselan
ELANNumber(0)  : 3
ELAN Number    : 3
ELAN Name      : ELAN003
ATM Address    : 39:00:00:00:00:00:00:00:20:D4:14:15:00:00:20:D4:14:15:03:02
Confirm(y/n)?  : y

switch_prompt #
```

The example below changes ELAN102 from an Ethernet BUSELAN to a Token Ring BUSELAN, changing the MTU to reflect the change in ELAN type. It assumes the LES has already been changed.

```
switch_prompt # modify buselan 102
ELANName(ELAN102)                       :
ConnectMethod(svc)                      :
ELANType(802.3)                         : 802.5
Multipoint(yes)                         :
MTU(1516)                               : 4544
ErrorlogEnable(NO)                      :
MinimumTDEnable(NO)                     :

switch_prompt #

switch_prompt # show buselan 102

ELAN: ELAN102

ELAN Number          : 102
ELAN Name            : ELAN102
ATM Address          : 39:00:00:00:00:00:00:00:20:D4:14:15:00:00:20:D4:14:15:66:02
Max Frame Size       : 4544
Connection Method    : SVC
Distribute VPI/VCI   : 0/2423
Sel.DistributeVPI/VCI: 0/2423
ELAN Type            : 802.5
Multipoint           : YES
Error Logging        : NO
Min TD Negotiation   : NO

switch_prompt #
```

BUSLECStat

Use BUSLECStat to display traffic statistics for clients connected to a BUS.

Operator

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	Number of the ELAN to which the BUS belongs.	0-125 or All	All
[LECId]	LEC identification number of the specified client.	0-65279	0

Output Parameter	Description
[LECId]	LEC identification number of the specified client.
[ATMAddress]	ATM address of the client.
[Receives]	Number of multicast and broadcast and unknown forward requests received by the BUS from this LEC.
[Forwards]	Number of requests forwarded by the BUS from this LEC.
[Discards]	Number of requests discarded by the BUS from this LEC.

Descriptions

Operator	Parameters/Permissions	Description
show buslecstat	[ELANNumber] **<elannumber>** [LecId] **<lecidvalue>** All	Displays statistical information about a specific client or all clients on that ELAN.

Examples

```
switch_prompt # show buslecstat
ELANNumber(0)  :
LECId(0)       :

 Client statistics for ELAN ELAN000
================================================================================
LECId          : 1
ATM address    : 39:00:00:00:00:00:00:00:20:D4:14:2F:00:00:20:D4:14:2F:00:00
Receives       : 17185
Forwards       : 17185
Discards       : 0
switch_prompt #
```

BUSStat

Use BUSStat to display or clear statistics of a BUS for an ELAN.

Operators

`show, clear`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	Number of the ELAN to which the BUS belongs.	0-125 or All	All

Output Parameter	Description
[Out Octets]	Number of octets (bytes) the BUS has sent since its initialization.
[Out Unicast]	Number of unicast frames forwarded by the BUS.
[Out Multicast]	Number of multicast frames forwarded by the BUS.
[In Octets]	Number of octets (bytes) the BUS has received since its initialization.
[In Unicast]	Number of unicast frames received by the BUS.
[In Multicast]	Number of multicast frames received by the BUS.
[Frame Timeouts]	Number of frames dropped by the BUS due to timeout.
[VCC Rejects]	Number of frames rejected because VCC is not available.

Descriptions

Operator	Parameters/Permissions	Description
show busstat	[ELANNumber] **<elannumber>** All	Displays BUS statistics for the specified ELAN or for all ELANs.
clear busstat	[ELANNumber] **<elannumber>** Administrator	Clears BUS statistics for the specified ELAN or for all ELANs.

Examples

```
switch_prompt # show busstat 3

  ELAN ELAN003 Statistics
  Out Octets           : 450432
  Out Unicast          : 7030
  Out Multicast        : 3
  In Octets            : 450432
  In Unicast           : 7030
  In Multicast         : 3
  Frame Timeouts       : 0
  VCC Rejects          : 0
switch_prompt #

switch_prompt # clear busstat
ELANNumber(ALL):
Clearing ALL  BUS ELAN Statistics
Confirm(y/n)?:y
switch_prompt #
```

BUStype

Use BUStype to enable/disable intelligent BUS mode.

Note If intelligent BUS mode is enabled, a unicast packet sent to the BUS is forwarded only to the LANE client whose destination address is specified in the packet. If intelligent BUS mode is not enabled, a unicast packet sent to the BUS is forwarded to all LANE clients connected to the BUS.

Operators

`modify`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[IntelligentBUSMode]	Enables/disables intelligent BUS mode.	Off, On	Off

Descriptions

Operator	Parameters/Permissions	Description
`modify bustype`	`[IntelligentBUSMode]` **`<intelligentbusmode>`** Administrator	Sets intelligent BUS mode.

Examples

```
switch_prompt # modify bustype
IntelligentBUSMode(OFF)                  : on

 BUS Type Set to Intelligent Mode

switch_prompt #
```

CACEqBwAllocScheme

Use CACEqBwAllocScheme to set or display the equivalent bandwidth allocation scheme of switch ports.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch. You can specify a physical or virtual port.	1A1 to 8B4 (for physical ports), 1A1.n to 8B4.n (for virtual ports), or All	All
[ServiceCategory]	Service category.	CBR, UBR, RTVBR, NRTVBR or ABR	CBR
[AllocScheme]	Allocation scheme for connection admission.	CON (conservative), LIB (liberal), MOD (moderate)	CON

Output Parameter	Description
[Port#]	Port number on the switch. (Same as the [PortNumber] input parameter.)
[Alloc Scheme]	Allocation scheme for connection admission for each service category.

Descriptions

Operator	Parameters/Permissions	Description
`modify caceqbwallocscheme`	`[PortNumber]` **`<portnumber>`** `[ServiceCategory]` **`<servicecategory>`** `[AllocScheme]` **`<allocscheme>`** Administrator	Sets allocation scheme.

Operator	Parameters/Permissions	Description
show caceqbwallocscheme	Administrator	Displays allocation scheme.

Examples

```
switch_prompt # show caceqbwallocscheme
PortNumber(ALL)                          :
=========================================================
Port#                  Alloc Scheme
                             for
            CBR     RTVBR   NRTVBR   UBR    ABR
=========================================================
7A1         CON      CON     CON     LIB    CON
7A1.1       CON      CON     CON     LIB    CON
7A2         CON      CON     CON     LIB    CON
7A3         CON      CON     CON     LIB    CON
7A4         CON      CON     CON     LIB    CON
7B1         CON      CON     CON     LIB    CON
7B2         CON      CON     CON     LIB    CON
7B3         CON      CON     CON     LIB    CON
CPU         CON      CON     CON     LIB    CON
CPU.1       CON      CON     CON     LIB    CON

switch_prompt #

switch_prompt # modify caceqbwallocscheme
PortNumber()                             : 7a1
SeriveCategory(CBR)                      : nrtvbr
AllocScheme(CONSERVATIVE)                : liberal

switch_prompt #

switch_prompt # show caceqbwallocscheme
PortNumber(ALL)                          :
=========================================================
Port#                  Alloc Scheme
                             for
            CBR     RTVBR   NRTVBR   UBR    ABR
=========================================================
7A1         CON      CON     LIB     LIB    CON
7A1.1       CON      CON     CON     LIB    CON
7A2         CON      CON     CON     LIB    CON
7A3         CON      CON     CON     LIB    CON
7A4         CON      CON     CON     LIB    CON
7B1         CON      CON     CON     LIB    CON
7B2         CON      CON     CON     LIB    CON
7B3         CON      CON     CON     LIB    CON
CPU         CON      CON     CON     LIB    CON
CPU.1       CON      CON     CON     LIB    CON

switch_prompt #
```

CacInfo

Use CacInfo to display bandwidth allocated to switch ports per service category.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch. You can specify a physical or virtual port.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), or All	All
[BandwidthUnit]	Unit for specifying bandwidth.	CPS (cells per second), KBS (Kbits per second), MBS (Mbits per second), or PER (percentage)	CPS

Output Parameter	Description
[Port#]	Port number on the switch. (Same as the [PortNumber] input parameter.)
[Total BW]	Available physical link bandwidth (in bandwidth units specified as input parameter).
[Total BW Allocated]	Bandwidth allocated on this port.
[BwAlloc for ServiceCategory]	Bandwidth allocated for each service category. Supported service categories are: CBR (constant bit rate), UBR (unspecified bit rate), RTVBR (realtime variable bit rate), NRTVBR (non-realtime variable bit rate), ABR (available bit rate).

Descriptions

Operator	Parameters/Permissions	Description
show cacinfo	[PortNumber] **<portnumber>** [BandWidthUnit] **<bandwidthunit>** Administrator	Displays port bandwidth per service category.

Examples

```
switch_prompt # show cacinfo

PortNumber(ALL)                       : ALL
BandWidthUnit(CPS)                    : CPS
=========================================================================
Port#       Total     Total BW    BwAlloc For ServiceCategory
             BW       Allocated   CBR    RT-VBR   NRT-VBR  UBR   ABR
=========================================================================
1A1         264186     10          0       0         0      10      0
1A2         264186      0          0       0         0       0      0
1A3         264186     10          0       0         0      10      0
1A4         264186      0          0       0         0       0      0
4B1         264186      0          0       0         0       0      0
4B2         264186      0          0       0         0       0      0
4B3         264186      0          0       0         0       0      0

switch_prompt #
```

CACPortBw

Use CACPortBw to display minimum and maximum bandwidth of switch ports.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), or All	All

Output Parameter	Description
[Port#]	Port number on the switch. (Same as the [PortNumber] input parameter.)
[MaxBandwidthInMbps]	Maximum bandwidth allocated to this port in MegaBits per second.
[MaxBandwidthInKbps]	Maximum bandwidth allocated to this port in KiloBits per second.
[MaxBandwidthInCps]	Maximum bandwidth allocated to this port in cells per second.
[MaxBandwidthInPer]	Maximum bandwidth allocated to this port in percentage.
[MinBandwidthInMbps]	Minimum bandwidth allocated to this port in MegaBits per second.
[MinBandwidthInKbps]	Minimum bandwidth allocated to this port in KiloBits per second.
[MinBandwidthInCps]	Minimum bandwidth allocated to this port in cells per second.
[MinBandwidthInPer]	Maximum bandwidth allocated to this port in percentage.

Descriptions

Operator	Parameters/Permissions	Description
show CACPortBw	Administrator	Displays minimum and maximum port bandwidth.

Examples

```
switch_prompt # show cacportbw
PortNumber(ALL)                          :
================================================================================
Port#          Max Bandwidth          |       Min Bandwidth
                     In               |            In
          Mbps     Kbps    Cps    %  |  Mbps Kbps    Cps     %
================================================================================
7A1       154     158208  422668  99     0    0       0      0
7A2       154     158208  422668  99     0    0       0      0
7A3       154     158208  422668  99     0    0       0      0
7A4       154     158208  422668  99     0    0       0      0
7B1       154     158208  422668  99     0    0       0      0
7B2       154     158208  422668  99     0    0       0      0
7B3       154     158208  422668  99     0    0       0      0
CPU       154     158208  422668  99     0    0       0      0
CPU.1     10      10752   28992   6      0    0       0      0

switch_prompt #
```

CACServiceClassBw

Use CACServiceClassBw to set or display the bandwidth allocated to each service category.

Note You can hot-swap TSMs. Hot-swapping is replacing a module when the chassis is powered up. If you replace a TSM with another TSM of the same type (same I/O ports), existing configuration of port parameters is not affected. This includes parameters set using any of the following attributes: ATMRoute, CACServiceClassBw, IlmiConfig, NetPrefix, Port, PortConfig, PVC, PVP, ServiceRegistry, SigTimer, SigStatistics, SSCOPConfig, and SSCOPStatistics. If you replace a TSM with another TSM of a different type, existing configuration of port parameters is deleted. The deletion occurs when the new module is plugged into the chassis backplane.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), or All	
[ServiceCategory]	Service category.	CBR, UBR, RTVBR, NRTVBR, ABR	UBR
[MaxBandwidthInPerCBR]	Maximum bandwidth allocated for CBR. (Total of all the service category bandwidth should not exceed 100%.)	Zero or positive integer	
[MaxBandwidthInPercentage RTVBR]	Maximum bandwidth allocated for RTVBR.	Zero or positive integer	
[MaxBandwidthInPercentage NRTVBR]	Maximum bandwidth allocated for NRTVBR.	Zero or positive integer	

Input Parameter	Description	Value/Field Size	Default
[MaxBandwidthInPercentage UBR]	Maximum bandwidth allocated for UBR.	Zero or positive integer	
[MaxBandwidthInPercentage ABR]	Maximum bandwidth allocated for ABR.	Zero or positive integer	

Output Parameter	Description
[Port#]	Port number on the switch. (Same as [PortNumber] input parameter.
[SC]	Service category. (Same as [ServiceCategory] input parameter.)
[Max Bandwidth In Mbps)	Maximum bandwidth in MegaBits per second allocated to the service category specified.
[Max Bandwidth In Kbps)	Maximum bandwidth in KiloBits per second allocated to the service category specified.
[Max Bandwidth In Cps]	Maximum bandwidth in cells per second allocated to the service category specified.
[Max Bandwidth In %]	Maximum bandwidth in percent allocated to the service category specified.

Descriptions

Operator	Parameters/Permissions	Description
modify cacserviceclassbw	[PortNumber] **<portnumber>** [ServiceCategory] **<servicecategory>** [BandwidthUnit] **<bandwidthunit>** [MaxBandwidthInPercentageCBR] **<maxbandinpercbr>** [MaxBandwidthInPercentageRTVBR] **<maxbandinperrtvbr>** [MaxBandwidthInPercentageNRTVBR] **<maxbandinpernrtvbr>** [MaxBandInPercentageUBR] **<maxbandinperubr>** [MaxBandInPercentageABR] **<maxbandinperabr>** [MaxBandwidth] **<maxbandwidth>** Administrator	Sets bandwidth per service category.
show cacserviceclassbw	Administrator	Displays bandwidth per service class.

Examples

```
switch_prompt # modify cacServiceClassBW

PortNumber()                                          : 1b1
MaximumBandWidthIn-Percentage-CBR(25)                 :
MaximumBandWidthIn-Percentage-RTVBR(25)               :
MaximumBandWidthIn-Percentage-NRTVBR(25)              :
MaximumBandWidthIn-Percentage-UBR(25)                 :
MaximumBandWidthIn-Percentage-ABR(0)                  :

switch_prompt #

switch_prompt #show cacServiceClassBW

PortNumber(ALL)                       : 1a1
SeriveCategory(UBR)                   : CBR

=========================================
Port#      SC         Max Bandwidth
                           In
                     Mbps  Kbps   Cps    %
=========================================
1A1        CBR      1      1      1      1

switch_prompt #
```

CACStatistics

Use CACStatistics to show CAC statistics for switch ports.

Operators

clear, show

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch. You can specify a physical or virtual port.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), or All	All

Output Parameter	Description
[Port Number]	Physical or virtual port number on the switch.
[Global Statistics]	Global CAC statistics (applies to all ports).
[Per Port Statistics]	Statistics for a specific port.

Descriptions

Operator	Parameters/Permissions	Description
clear cacstatistics	[PortNumber] **<portnumber>** Administrator	Clears CAC statistics of a port or all ports.
show cacstatistics	[PortNumber] **<portnumber>** Administrator	Displays CAC statistics of a port or all ports.

Examples

```
switch_prompt # show cacstatistics
PortNumber()                              : 1a1

================================================================
                  CAC Statistics
================================================================
Global Statistics :
No of Rejections due to no memory                              :0
No of Rejections due to Invalid Physical port                  :0
No of Rejections due to Invalid logical port                   :0
No of Rejections due to Invalid VPI                            :0
No of Rejections due to Pre CAC no memory                      :0

Per Port Statistics :
Port Number                                                    :1A1
No of calls rejected due to User cell rate unavailable         :0
No of calls rejected due to Sytem Low Memory                   :0
No of calls rejected due to Link Down                          :0
No of calls rejected due to VPCI/VCI unavailable               :0
No of calls rejected due to Unsupported traffic params         :0
No of CBR calls rejected                                       :0
No of RT_VBR calls rejected                                    :0
No of NRT_VBR calls rejected                                   :0
No of UBR calls rejected                                       :0
No of ABR calls rejected                                       :0
No of CBR calls HIGH threshold exceeded                        :0
No of CBR calls LOW threshold exceeded                         :0
No of RT_VBR calls HIGH threshold exceeded                     :0
No of RT_VBR calls LOW threshold exceeded                      :0
No of NRT_VBR calls HIGH threshold exceeded                    :0
No of NRT_VBR calls LOW threshold exceeded                     :0
No of UBR calls HIGH threshold exceeded                        :0
No of UBR calls LOW threshold exceeded                         :0
No of ABR calls HIGH threshold exceeded                        :0
No of ABR calls LOW threshold exceeded                         :0
No of PNNI Updates sent                                        :0
Total No of calls HIGH threshold exceeded                      :0
Total No of calls LOW threshold exceeded                       :0

switch_prompt #
```

Client

Use Client to manage LANE and IP/ATM clients on the switch. Clients on the switch are called local clients.

Note Use the LANEClient attribute to add or modify a LANE client. Use the IPATMClient attribute to add or modify an IP/ATM client.

Operators

`activate, deactivate, delete, restart, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ClientNumber]	Number of the local client.	0-127 or All	All

In the Output Parameter table below, (**`</d>`**) appears next to parameters that are available only through the **`show client /d`** (detailed) command.

Output Parameter	Description
[Client]	Number of the local client. (Same as the [ClientNumber] input parameter.)
[Type]	Type of client.
[IP Address]	IP address of client.
[Server Type]	Specifies what server type the client is on.
[Server Conn]	Status of connection the client has with the server. Possible values are: Established and Shutdown.
[Status]	Current status of the client.
[Client State] **`</d>`**	Status of where the client is in the process of making a connection.
[Client Address] **`</d>`**	ATM address of the client.

Output Parameter	Description
[LAN Name] **</d>**	ELAN name for this client.
[LECS Addr Source] **</d>**	ILMI, well-known address, or LECS address.
[LECS Address] **</d>**	ATM address of the LECS.
[LES Address] **</d>**	ATM address of the LES.
[LAN Type] **</d>**	Type of ELAN.
[MTU] **</d>**	Maximum transfer unit assigned for this client.
[IP NetMask] **</d>**	IP netmask assigned to the client.

Descriptions

Operator	Parameters/Permissions	Description
activate client	[ClientNumber] **<clientnumber>** Administrator	Activates a client on the switch (same as the **restart client** command).
deactivate client	[ClientNumber] **<clientnumber>** Administrator	Deactivates a client on the switch.
delete client	[ClientNumber] **<clientnumber>** Administrator	Removes a client from the switch.
restart client	[ClientNumber] **<clientnumber>** Administrator	Restarts a client on the switch. If a client fails to successfully join a VLAN, you can restart the client to retry. The switch software, on a periodic basis, automatically tries to restart clients that have not successfully joined. Enter **show client** to confirm that the client(s) have restarted.
show client (/d)	[ClientNumber] **<clientnumber>** All	Displays the details of a client on the switch. You can obtain more details of all the clients on the switch by adding **/d** to the end of the command. For example, **show client /d**.

Examples

```
switch_prompt # delete client 4
IP/ATM Client4 Address: 39:00:00:00:00:00:00:00:00:00:14:15:00:00:00:7A:01:01:5B:00
Confirm(y/n)?:y
switch_prompt #

switch_prompt # show client
ClientNumber(ALL)    :

Client Type    IP Address      Server Type  Server Conn  Status
=============================================================================
    1  LANE    90.1.1.186      LECS         Established  Operational
    3  IP/ATM  90.1.1.124      Local        Established  Operational
switch_prompt #

switch_prompt # restart client
ClientNumber(ALL)   :
switch_prompt #

switch_prompt # show client
ClientNumber(ALL)   :

Client Type    IP Address      Server Type  Server Conn  Status
=============================================================================
    1  LANE    90.1.1.186      LECS         Shutdown     Initial
    3  IP/ATM  90.1.1.124      Local        Shutdown     Initial
switch_prompt #

switch_prompt # show client /s
ClientNumber(ALL)  :

Client Type    IP Address      Server Type  Server Conn  Status
=============================================================================
    1  LANE    90.1.1.186      LECS         Established  Operational
    3  IP/ATM  90.1.1.124      Local        Established  Operational
switch_prompt #
```

With the following example (**</d>**), notice how you get the same amount of detail whether you specify the client or accept the default (All):

```
switch_prompt # show client /d
ClientNumber(ALL) :

LANE Client 1
================================================================================
Client State    : Operational
Client Address  : 39:00:00:00:00:00:00:00:00:00:14:15:00:00:20:D4:14:15:00:00
LAN Name        : elan1
LECS Addr Source: ILMI
LECS Address    : 39:00:00:00:00:00:00:00:00:00:14:15:00:00:20:D4:14:15:00:01
LES Address     : 39:00:00:00:00:00:00:00:00:00:14:15:00:00:20:D4:14:15:00:02
LAN Type        : 802.3
MTU             : 1516
IP Address      : 90.1.1.186
IP NetMask      : 255.255.255.0

IP/ATM Client 3
================================================================================
Client State    : Operational
Client Address  : 39:00:00:00:00:00:00:00:00:00:14:15:00:00:00:5A:01:01:7C:00
Server          : is local
Server Connection: Established
MTU             : 9180
IP Address      : 90.1.1.124
IP NetMask      : 255.0.0.0
switch_prompt #

switch_prompt # show client 3 /d

IP/ATM Client 3
================================================================================
Client State    : Operational
Client Address  : 39:00:00:00:00:00:00:00:00:00:14:15:00:00:00:5A:01:01:7C:00
Server          : is local
Server Connection: Established
MTU             : 9180
IP Address      : 90.1.1.124
IP NetMask      : 255.0.0.0
switch_prompt #
```

ClientARP

Use ClientARP to display the ARP table maintained by each LANE or IP/ATM client on the switch. For a LANE client, the table contains mappings of MAC to ATM addresses for destination clients. The mappings are supplied by the ARP server of each ELAN to which the LANE client connects. For an IP/ATM client, the table contains mappings of IP to ATM addresses for destination clients. The mappings are supplied by the ARP server of each IP/ATM VLAN to which the IP/ATM client connects. The LANE and IP/ATM clients cache the mappings to avoid repeated address resolution requests to ARP servers.

Note Clients on the switch are called local clients.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[ClientNumber]	Number of the local client.	0-127 or All	All

Output Parameter	Description
[MAC Address]	MAC address of the LANE destination client.
[IP Address]	IP address of the IP/ATM destination client.
[ATM Address]	ATM address of the LANE or IP/ATM destination client.

Descriptions

Operator	Parameters/Permissions	Description
show clientarp	[ClientNumber] **<clientnumber>** All	Displays details about LANE or IP/ATM client ARP entries.

Examples

```
switch_prompt # show clientarp
ClientNumber(ALL) :

LANE Client 0 ARP Table

MAC Address        ATM Address
================================================================================
00:20:D4:14:15:00  39:00:00:00:00:00:00:00:20:D4:14:15:00:00:20:D4:14:15:00:02


IP/ATM Client 3 ARP Table

IP Address     ATM Address
================================================================================================
10.1.1.1       39:00:00:00:00:00:00:00:20:D4:14:15:00:00:20:D4:14:2F:00:00:0A:01:01:02:00

switch_prompt #
```

ClientStat

Use ClientStat to display packet count statistics of LANE or IP/ATM clients on the switch.

Note Clients on the switch are called local clients.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[ClientNumber]	Number of the local client.	0-127 or All	All

In the Output Parameter table below, (**</d>**) appears next to parameters that are available only through the **show clientstat /d** (detailed) command. The (IP/ATM) and (LANE) client indicators after particular parameters indicate that these parameters display only if that particular client type is active.

Output Parameter	Description
[Client]	Number of the client. (Same as the [ClientNumber] input parameter.)
[Type]	Type of client.
[RxPkts]	Number of packets received.
[TxPkts]	Number of packets transmitted.
[RxOctets]	Number of octets (bytes) received.
[TxOctets]	Number of octets (bytes) transmitted.
[Bytes Received] **</d>**	Number of bytes received.
[Unicast Packets] **</d>**	Number of unicast packets received or transmitted.

Output Parameter	Description
[Multicast Packets] **</d>**	Interface maximum transfer unit to assign to the local interface associated with this client.
[Broadcast Packets] **</d>**	Number of broadcast packets received or transmitted.
[Error Packets] **</d>**	Number of error packets received or transmitted.
[Dropped Packets] **</d>**	Number of received or transmitted packets dropped.
[Bytes Transmitted] **</d>**	Number of bytes transmitted.
[ARP Requests Sent] **</d>**	ARP requests from a server sent to the client.
[ARP Replies Rcvd] **</d>**	ARP replies from a client received by the server.
[ARP Requests Rcvd] **</d>**	ARP requests from a client received by the server.
[ARP Replies Sent] **</d>**	ARP replies from a server sent to the client.
[Ctrl Frames Sent] (LANE) **</d>**	Number of control frames sent.
[Ctrl Frames Rcvd] (LANE) **</d>**	Number of control frames received.
[SVC Failures] (LANE) **</d>**	Number of clients who failed to join the SVC (switched virtual circuit).
[ARP Unreachables] (IP/ATM) **</d>**	ARP unreachable clients.
[ARP NAKs] (IP/ATM) **</d>**	Number of inverse ARP NAKs (negative acknowledges) received.

Descriptions

Operator	Parameters/Permissions	Description
show clientstat	[ClientNumber] **<clientnumber>** All	Displays packet count statistics for local clients.

Examples

The examples show statistics for all clients, detail (**</d>**) for all clients, an IP/ATM client, and a LANE client.

```
switch_prompt # show clientstat
ClientNumber(ALL):

Client Type       RxPkts    TxPkts   RxOctets   TxOctets
================================================================================
    1  LANE            0         0          0          0
    3  IP/ATM          0         0          0          0
switch_prompt #

switch_prompt # show clientstat /d
ClientNumber(ALL):

Stats for LANE client 1
================================================================================
Rx Stats
Bytes Received                          : 0
Unicast Packets                         : 0
Multicast Packets                       : 0
Broadcast Packets                       : 0
Error Packets                           : 0
Dropped Packets                         : 0
Tx Stats
Bytes Transmitted                       : 0
Unicast Packets                         : 0
Multicast Packets                       : 0
Broadcast Packets                       : 0
Error Packets                           : 0
Dropped Packets                         : 0
LAN Emulation Statistics
ARP Requests Sent                       : 3
ARP Replies Rcvd                        : 3
ARP Requests Rcvd                       : 0
ARP Replies Sent                        : 0
Ctrl Frames Sent                        : 9
Ctrl Frames Rcvd                        : 9
SVC Failures                            : 0

Stats for IP/ATM client 3
================================================================================
Rx Stats
Bytes Received                          : 0
Unicast Packets                         : 0
Multicast Packets                       : 0
Broadcast Packets                       : 0
Error Packets                           : 0
Tx Stats
Bytes Transmitted                       : 0
Unicast Packets                         : 0
Multicast Packets                       : 0
Broadcast Packets                       : 0
Error Packets                           : 0
Dropped Packets                         : 0
IP/ATM Statistics
ARP Requests Sent                       : 0
ARP Replies Rcvd                        : 0
ARP Requests Rcvd                       : 0
ARP Replies Sent                        : 0
ARP Unreachables                        : 0
ARP NAKs                                : 0
```

```
switch_prompt # show clientstat 3

Stats for IP/ATM client 3
================================================================================
Rx Stats
Bytes Received                          : 0
Unicast Packets                         : 0
Multicast Packets                       : 0
Broadcast Packets                       : 0
Error Packets                           : 0
Dropped Packets                         : 0
Tx Stats
Bytes Transmitted                       : 0
Unicast Packets                         : 0
Multicast Packets                       : 0
Broadcast Packets                       : 0
Error Packets                           : 0
Dropped Packets                         : 0
IP/ATM Statistics
ARP Requests Sent                       : 0
ARP Replies Rcvd                        : 0
ARP Requests Rcvd                       : 0
ARP Replies Sent                        : 0
ARP Unreachables                        : 0
ARP NAKs                                : 0
switch_prompt #

switch_prompt # show clientstat 1

Stats for LANE client 1
================================================================================
Rx Stats
Bytes Received                          : 0
Unicast Packets                         : 0
Multicast Packets                       : 0
Broadcast Packets                       : 0
Error Packets                           : 0
Dropped Packets                         : 0
Tx Stats
Bytes Transmitted                       : 0
Unicast Packets                         : 0
Multicast Packets                       : 0
Broadcast Packets                       : 0
Error Packets                           : 0
Dropped Packets                         : 0
LAN Emulation Statistics
ARP Requests Sent                       : 3
ARP Replies Rcvd                        : 3
ARP Requests Rcvd                       : 0
ARP Replies Sent                        : 0
Ctrl Frames Sent                        : 9
Ctrl Frames Rcvd                        : 9
SVC Failures                            : 0
switch_prompt #
```

ClientVC

Use ClientVC to display VCs associated with ARP mappings cached by LANE or IP/ATM clients on the switch. ClientARP is similar to ClientVC but does not show the VPI/VCI corresponding to a route to a destination client.

Note Clients on the switch are called local clients.

Operator

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[ClientNumber]	Number of the local client.	0-127 or All	All

Output Parameter	Description
[MAC Address]	MAC address of the LANE destination client.
[IP Address]	IP address of the IP/ATM destination client.
[VPI/VCI]	VPI/VCI values of control direct VCC or multicast Send VCC to the destination client.
[ATM Address]	ATM address of the LANE or IP/ATM destination client.

Descriptions

Operator	Parameters/Permissions	Description
show clientvc	[ClientNumber] **<clientnumber>** All	Displays VC details for local IP/ATM or LANE clients in addition to client ARP mapping details. For IP/ATM, the destination IP address appears; for LANE, the destination MAC address appears. The destination address is what is located at the other end of the VC.

Examples

```
switch_prompt # show clientvc
ClientNumber(ALL) :
LANE Client 0 VC Table

MAC Address        VPI/VCI
                   ATM Address
================================================================================
00:02:D4:14:22:80  0/2453
                   39:00:00:00:00:00:00:00:20:D4:14:15:00:00:20:D4:14:22:80:00

IP/ATM Client 50 VC Table

IP Address         VPI/VCI
                   ATM Address
================================================================================
10.1.1.2           0/130
                   39:00:00:00:00:00:00:00:20:D4:14:22:80:00:00:0A:01:01:02:00
```

Community

Use Community to group NMS (network management system) hosts by privilege level. Hosts are collectively called communities. Host privilege levels determine the type of information access permitted by the switch. The switch provides access to the information only if the request comes from a community configured with the necessary privileges.

Operators

`add, delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[Name]	SNMP community name. Needs to be defined on the switch to access SNMP.	64 characters	No default
[IPAddr]	IP address of the host or hosts that can use this community name. Entering 0.0.0.0 allows access by any host.	Dot decimal/ 7-15 characters	No default
[Privilege]	Privileges associated with this community.	Read, Write, Read-write	Read

Output Parameter	Description
[Community Name]	SNMP community name. (Same as the [Name] input parameter.)

Descriptions

Operator	Parameters/Permissions	Description
`add community`	`[Name]` **`<communityname>`** `[IPAddr]` **`<ipaddress>`** `[Privilege]` **`<privilege>`** Administrator	Creates a community on the switch.

Operator	Parameters/Permissions	Description
delete community	[Name] **<communityname>** [IPAddr] **<ipaddress>** Administrator	Removes a community from the switch.
show community	Administrator	Displays all communities configured on the switch.

Examples

```
switch_prompt # add community
Name()                                  : boris
IpAddr()                                : 90.1.1.1
Priviledge(read)                        :
switch_prompt #

switch_prompt # show community

Community Name                    IP Address           Privilege
================================================================================
ILMI                               0.0.0.0             READ
boris                              90.1.1.1            READ
public                             0.0.0.0             READ
zeitnet                            0.0.0.0             WRITE
switch_prompt #

switch_prompt # delete community
Name()                                  : boris
IpAddr()                                : 90.1.1.1
switch_prompt #

switch_prompt # show community

Community Name                    IP Address           Privilege
================================================================================
ILMI                               0.0.0.0             READ
public                             0.0.0.0             READ
zeitnet                            0.0.0.0             WRITE
switch_prompt #
```

Config

Use Config to erase the configuration information on the SmartSwitch 6500. Before using the **`clear config`** command, you should back up the switch configuration using the **`backup switch`** command.

Operators

`clear, flush`

Parameters

This attribute has no input or output parameters. Just enter **`clear config`** at the switch prompt.

Descriptions

Operator	Parameters/Permissions	Description
`clear config`	Administrator	Erases all switch configuration information, including Ethernet interface address, IP/ATM VLAN and ELAN configurations, signaling configuration, port configurations, and so on.

Examples

```
switch_prompt # clear config
You should backup your configuration using the "backup switch" command, in case
you want to recover this configuration
Continuing will permanently erase the current switch configuration,
and requires a switch reboot.
Are you sure this is what you want to do?
Confirm(y/n)?:y
Configuration cleared.
Rebooting is required to ensure correct operation,
Do you want to reboot now?
Confirm(y/n)?:y
```

ConsoleTimeout

Use ConsoleTimeout to set or display the timeout for the console interface.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ConsoleTimeout]	Console timeout (in minutes).	1-60 min. Setting console timeout to 0 toggles console timeout off.	0 (Off)

Output Parameter	Description
[ConsoleTimeout]	Console timeout (in minutes).

Descriptions

Operator	Parameters/Permissions	Description
`modify consoletimeout`	`[ConsoleTimeout]` **`<consoletimeout>`** Administrator	Sets console timeout.
`show consoletimeout`	Administrator	Displays current console timeout.

Examples

```
switch_prompt # set consoletimeout
ConsoleTimeout(0)      : 0
You are about to disable Console Timeout

Confirm (y/N)? : y

switch_prompt #

switch_prompt # show consoletimeout
Console Timeout in minutes
================================================================================
ConsoleTimeout         : OFF

switch_prompt #
```

CoreDump

Use CoreDump to dump the system CPU and/or common DRAM in the event of a system failure. The core is dumped to a file specified on a local Ethernet host. To use CoreDump, the Ethernet host must run TFTP server software, and you must have write access to the TFTP directory.

Operators

`modify, show`

Parameters

Input Parameters	Description	Value/Field Size	Default
[EnableCoreDump]	Enables core dump.	Y (Yes), N (No)	N
[ServerIP]	IP address of host to which the core is dumped.		No default
[CoreDumpFile]	Full pathname of the file to which the core is dumped.		No default
[userName]	Login name on the host to which the core is dumped. The user should have write access to the directory on the host specified.		No default
[UserPassword]	Password on the host.		No default

Output Parameter	Description
[CoreDumpEnabled]	Indicates whether or not core dump is enabled. (Same as the [EnableCoreDump] input parameter.)
[CoreDumpServerIP]	IP address of host to which the core is dumped. (Same as the [ServerIP] input parameter.)
[CoreDumpFile]	Full pathname of the file to which the core is dumped.

Descriptions

Operator	Parameters/Permissions	Description
modify coredump	[EnableCoreDump] **<enablecoredump>** [ServerIP] **<serverip>** [CoreDumpFile] **<coredumpfile>** [userName] **<username>** [UserPassword] **<password>** Administrator	Enables core dump. Once enabled, the core is dumped to the file specified in the event of a system failure. The core dump takes about five minutes. After the core dump, the switch is rebooted. The core is dumped to two files, one containing CPU memory (core_cpu), the other common memory (core_cmn). You can send these files to Cabletron customer support for analysis. The **modify coredump** command uses FTP to create the core_cpu and core_cmn files. If the host does not run FTP, create these files manually before executing the modify coredump command. Ensure the files have write access for everyone. Note that each subsequent core dump overwrites data from the previous core dump. If you want to retain the previous core dump, rename the core dump files or move them.
show coredump	Administrator	Displays core dump status.

Examples

```
switch_prompt # modify coredump

EnableCoreDump(N)    :Y
ServerIP()           :204.95.77.240
CoreDumpFile()       :/tftpboot/ssubrama/core
userName()           :ssubrama
UserPassword()         :password

switch_prompt # show coredump

CoreDumpEnabled       :  Yes
CoreDumpServerIP      :  204.95.77.240
CoreDumpFile          :  /tftpboot/ssubrama/core
```

CpuSwitchover

Use CpuSwitchover to switch roles of the redundant (slave) and master TSM/CPU modules (the slave module becomes the master module and vice versa). The **`execute cpuswitchover`** command is available only if a slave module is present.

Note After the switchover, the new master module must be rebooted.

Operators

`execute`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[BackupConfig]	Sets/unsets a flag to backup configuration.	Y (Yes), N (No)	N

Descriptions

Operator	Parameters/Permissions	Description
`execute cpuswitchover`	`[BackupConfig]` **`<backupconfig>`** Administrator	Switches the slave TSM/CPU module to the master TSM/CPU module and vice versa. The current master configuration is backed up before the switchover is made. After the switchover, the master configuration is restored to the new master (the module that was the slave before the switchover).

Examples

```
switch_prompt # execute cpuswitchover
BackupConfig(N)                         :

Backup the config and restore it on the redundant CPU when it boots up.
```

DS3E3LoopBack

Use DS3E3LoopBack to set or display loopback at DS3 or E3 ports.

Note A port in loopback mode does not pass normal traffic.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Physical port number on the switch.	1A1 to 8B4	All
[Loopback]	Loopback mode (see Table 2-3).	None, Cell, Payload, Line, Diag	None

Output Parameter	Description
[Port]	Port number on the switch.
[Type]	Type of port.
[Loopback]	Loopback mode specified (see Table 2-3).

Descriptions

Operator	Parameters/Permissions	Description
`modify ds3e3loopback`	`[Port]` **`<port>`** `[Loopback]` **`<loopback>`** Administrator	Sets loopback status of DS3 and E3 ports.

Operator	Parameters/Permissions	Description
show ds3e3loopback	Administrator	Displays loopback status of DS3 and E3 ports.

Table 2-3 DS3 and E3 Loopback Modes

Mode	Description
None	Loopback is not enabled. The port passes normal traffic.
Cell	The DS3 or E3 stream is received from the network, unframed into ATM cells, reframed, and then retransmitted to the network.
Payload	The DS3 or E3 stream is received from the network, has the DS3 or E3 overhead bits reinserted, and is retransmitted to the network.
Line	Connects the transmitter to the receiver. The DS3 or E3 stream received from the line is retransmitted back out to the line. Cells generated by the switch to this port are not sent over the line.
Diag	Connects the receiver to the transmitter. The DS3 or E3 stream transmitted by the switch to a port is looped back to the switch. The DS3 or E3 stream is still transmitted to the network, but the incoming DS3 or E3 stream is ignored.

Examples

```
switch_prompt # show ds3e3loopback
Port(ALL)                                   :
 Port      Type   Loopback
================================================================================
1D1        DS3    None
1D2        DS3    None
1D3        DS3    None
1D4        DS3    None

switch_prompt #

switch_1 # set ds3e3loopback
Port()                                      : 1d3
Loopback(None)                              : Cell
NOTICE - 'tConsole' Port 1D3 (15) DOWN

switch_1 # show ds3e3loopback
Port(ALL)                                   :
 Port      Type   Loopback
================================================================================
 1D1        DS3    None
 1D2        DS3    None
 1D3        DS3    Cell
 1D4        DS3    None
```

ELAN

Use ELAN to create or delete ELANs on the switch. It is a means to manage ELAN servers with one command. To manage ELAN servers individually, see the BUSELAN, LECSELAN, and LESELAN attributes.

Note The BUSELAN, LECSELAN, and LESELAN attributes manage, respectively, the Broadcast and Unknown Server (BUS), LAN Emulation Configuration Server (LECS), and the LAN Emulation Server (LES). The ELAN is served by a specific BUS and LES (which sometimes are said to belong to the ELAN). The ELAN is served by the network LECS.

Operators

`add, delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	Number of the ELAN.	0-125	0
[ELANName]	Name of the ELAN.	Up to 32 characters	
[ConnectMethod]	Type of connection used.	SVC	SVC
[ELANType]	The data-link type used by the ELAN.	802.3 (Ethernet) 802.5 (TokenRing)	802.3
[Multipoint]	Indicates whether control distribute VCC is PMP (point-to-multipoint) or PTP (point-to-point).	Yes: VCC is PMP No: VCC is PTP	Yes
[MTU]	Maximum transfer unit for the clients joining this ELAN.	1516, 1580, 4544, or 9234	1516
[ErrorLogEnable]	Whether or not the BUS and LES error logs are enabled.	Yes, No	No
[MinimumTDEnable]	Whether or not minimum acceptable traffic descriptor negotiation is enabled.	Yes, No	No
[ForwardPeakCellRate]	Minimum forward peak cell rate.	Positive integer	

Input Parameter	Description	Value/Field Size	Default
[BackwardPeakCellRate]	Minimum backward peak cell rate.	Positive integer	
[Distribute]	Establishes the nature of the control distribute VCC. Possible values are: All or Proxy. All establishes control distribute VCC to all clients. Proxy establishes control distribute VCC only to proxy clients.	All, Proxy	Proxy

Output Parameter	Description
[ELAN Number]	Number of the ELAN.
[LECS Address]	ATM address of the LECS that serves the ELAN.
[LES Address]	ATM address of the LES that serves the ELAN.
[ELAN Name]	Name of the ELAN.
[ELAN Type]	Type of the ELAN.
[MTU]	Maximum transfer unit for the clients joining the ELAN.
[Connection Method]	Type of connection used. (Same as the [ConnectMethod] input parameter.)
[Distribute VPI/VCI]	VPI/VCI values of the control direct VCC or multicast send VCC.
[Distribute Method]	Whether the control distribute VCC is established for all clients or only proxy clients.
[Multipoint]	Indicates whether control distribute VCC is PMP (point-to-multipoint) or PTP (point-to-point). Possible values are: Yes or No.
[Error Logging]	Whether or not the BUS, LECS, and LES error logs are enabled.
[Min TD Negotiation]	Whether or not minimum acceptable traffic descriptor negotiation is enabled.

Descriptions

Operator	Parameters/Permissions	Description
add elan	[ELANNumber] **<elannumber>** [ELANName] **<elanname>** [ConnectMethod] **<connectmethod>** [ELANType] **<elantype>** [Multipoint] **<distributevcctype>** [MTU] **<maximumframesize>** [ErrorLogEnable] **<errorlogenable>** [MinimumTDEnable] **<minimumtdenable>** [ForwardPeakCellRate] **<forwardpeakcellrate>** [BackwardPeakCellRate] **<backwardpeakcellrate>** [Distribute] **<controldistributevccoption>** Administrator	Quickly configures an ELAN on the switch. It adds an ELAN entry in the databases for the BUS, LECS, and LES. It also activates the ELAN.
delete elan	[ELANNumber] **<elannumber>** Administrator	Quickly removes an ELAN configuration from the switch. This command first checks that all servers (LECS, LES, and BUS) exist before deleting any of them.
show elan	[ELANNumber] **<elannumber>** All	Displays an ELAN created by either the quick **add elan** or the multiple set of commands to add an ELAN.

Examples

```
switch_prompt # add elan
ELANNumber(0)                          : 11
ELANName(ELAN011)                      :
ConnectMethod(SVC)                     :
ELANType(802.3)                        :
Multipoint(YES)                        :
MTU(1516)                              :
ErrorLogEnable(NO)                     :
MinimumTDEnable                        :
ForwardPeakCellRate()                  :
BackwardPeakCellRate()                 :
Distribute(PROXY)                      :

switch_prompt #

switch_prompt # delete elan
ELANNumber(0): 11
Confirm(y/n)?: y

switch_prompt #

switch_prompt # show elan 0
ELAN  0

================================================================================
ELAN Number       : 0
LECS Address      : 39:00:00:00:00:00:00:00:00:00:A3:87:0B:00:00:1D:A3:87:0B:01
LES Address       : 39:00:00:00:00:00:00:00:00:00:A3:87:0B:00:00:1D:A3:87:0B:02
ELAN Name         : ELAN000
ELAN Type         : 802.3
MTU               : 1516
Connection Method : SVC
Distribute VPI/VCI: 0/0
Distribute Method : PROXY
Multipoint        : YES
Error Logging         : NO
Min TD Negotiation    : NO

switch_prompt #
```

EventDisplay

Use EventDisplay to enable/disable the display of event messages on the console screen.

Note Use Events to display the events currently logged.

Operators

`modify, show`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[EventDisplay]	Toggles the display On or Off.	On, Off	

Descriptions

Operator	Parameters/Permissions	Description
`modify eventdisplay`	`[EventDisplay]` **`<eventdisplay>`** Administrator	Toggles display of event messages on the console screen.
`show eventdisplay`	Administrator	Displays status of events display.

Examples

```
switch_1 # show eventdisplay
Event Display is ON

switch_1 #

switch_1 # modify eventdisplay
EventDisplay(ON)                          : off

switch_1 #

switch_1 # show eventdisplay
Event Display is OFF

switch_1 #
```

Events

Use Events to display or delete events currently logged.

Note Events are not persistent on reboot (are not retained in the event log).

Operators

`delete, show`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[Index]	The index(es) of the events you want to display or delete.	Positive integer or All	All

Descriptions

Operator	Parameters/Permissions	Description
`delete events`	`[Index]` **`<index>`** Administrator	Deletes an event or all events.
`show events`	`[Index]` **`<index>`** Administrator	Displays event(s) currently logged. Event information includes message index number, event ID, message text, severity, and a timestamp (time the event occurred, with respect to switch up-time in hours, minutes, seconds, and milliseconds).

Examples

```
switch_prompt # show events
Index(ALL)                                  :
0  33554656  MINOR EVENT        001:27:50:708
-------------------------------------------------
Sendto failed for IP address 206.61.231.153
1  33554656  MINOR EVENT        001:27:51:612
-------------------------------------------------
Sendto failed for IP address 206.61.231.153
2  33554656  MINOR EVENT        001:27:51:728
-------------------------------------------------
Sendto failed for IP address 206.61.231.153
3  33554656  MINOR EVENT        001:27:53:683
-------------------------------------------------
Sendto failed for IP address 206.61.231.153

switch_prompt #

switch_prompt # delete events
Index(ALL)                                  : 2

switch_prompt # show events
Index(ALL)                                  :
0  33554656  MINOR EVENT        001:27:50:708
-------------------------------------------------
Sendto failed for IP address 206.61.231.153
1  33554656  MINOR EVENT        001:27:51:612
-------------------------------------------------
Sendto failed for IP address 206.61.231.153
3  33554656  MINOR EVENT        001:27:53:683
-------------------------------------------------
Sendto failed for IP address 206.61.231.153
```

Exit

Use Exit to disconnect your console connection from the switch.

Operator

`exit`

Parameters

This attribute has no parameters. Just enter **`exit`** at the switch prompt.

Descriptions

Operator	Permission	Description
`exit`	`[exit]` **`<exit>`** All	This closes your console connection. Enter **`exit`** when you are finished with a console session. If you do not exit your session, the switch remains unavailable to anyone else.

Examples

```
switch_prompt # exit
Exiting SmartSwitch Command Console
```

Firmware

Use Firmware to download switch software from a TFTP server.

Operators

`update`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[ServerIP]	IP address of server with the software.	Dot decimal/ 7-15 characters	Last IP address
[Path]	Full pathname of the directory that contains the software.		Last path used

Descriptions

Operator	Parameters/Permissions	Description
`update firmware`	`[Server IP]` **`<serverip>`** `[Path]` **`<path>`** Administrator	Updates the switch software (for example, when upgrading your switch). You must know the full pathname of the updated image files. In addition, the TFTP protocol must be installed on the server. After doing an update, you must reboot the switch for the new firmware to take effect. Reboot does not affect switch configuration.

Examples

```
switch_prompt # update firmware
ServerIP()                              : 206.61.237.127
Path(public/Smart6500_1.ima)            : builds/lab-02.02.22/ser
ver.ima

You are updating the code image in the flash.

Are you sure this is what you want to do?
Confirm(y/n)?:y

Verifying bootfile builds/lab-02.02.22/server.ima on 206.61.237.127
...passed.

Erasing Flash.

Using TFTP to get and program bootfile builds/lab-02.02.22/server.i
ma from 206.61.237.127.
4903K (5021184 bytes) received.

Flash update succeeded.

You will have to reboot for the new image to take effect.

switch_prompt #
```

History

Use History to view or repeat one of the last five console commands entered.

Operators

`history`

Parameters

This attribute has no parameters. Just enter **`history`** at the switch prompt.

Descriptions

Operator	Parameters/Permissions	Description
`history`	`[history]` **`<history>`** All	Displays the last five console commands entered. It also displays an index number that allows you to quickly repeat any of those commands. To repeat a command listed by history, type **`!<indexnumber>`**. For example, to repeat **`passwd`** in the following example, type **`!4`**.

Examples

```
switch_prompt # history
 5-     modify prompt
 4-     passwd
 3-     show privilege
 2-     enable
 1-     history
switch_prompt # !4
switch_prompt # passwd
```

IlmiConfig

Use IlmiConfig to manage ILMI timers specified in ILMI 4.0 and to enable or disable ILMI functions.

Note You can hot-swap TSMs. Hot-swapping is replacing a module when the chassis is powered up. If you replace a TSM with another TSM of the same type (same I/O ports), existing configuration of port parameters is not affected. This includes parameters set using any of the following attributes: ATMRoute, CACServiceClassBw, IlmiConfig, NetPrefix, Port, PortConfig, PVC, PVP, ServiceRegistry, SigTimer, SigStatistics, SSCOPConfig, and SSCOPStatistics. If you replace a TSM with another TSM of a different type, existing configuration of port parameters is deleted. The deletion occurs when the new module is plugged into the chassis backplane.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), or All	All
[IlmiAddressRegistration]	Controls ILMI address registration.	Enable, Disable	Enable
[IlmiConnectivity]	Controls ILMI connectivity.	Enable, Disable	Enable
[Timer-S]	Timer S in seconds for establishing ILMI connectivity.	1-65535	1
[Timer-T]	Timer T in seconds for checking ILMI connectivity.	0-65535	5
[Factor-K]	Number of K consecutive polls for which no ILMI response is received before ILMI connectivity is declared lost.	0-65535	4

Note If you hot-swap a TSM with a TSM of a different type (different I/O ports), ILMI timer information associated with ports on the original TSM is deleted. Before you insert a replacement TSM, you can display existing timer information using the **`show`** operator with the **`/o`** option (for example: **`show ilmiconfig /o`**).

Output Parameter	Description
[Port]	Port number on the switch. (Same as the [PortNumber] input parameter.)
[ILMIAddress]	Shows whether or not ILMI address registration is enabled.
[ILMI]	Shows whether or not ILMI connectivity is enabled.
[Timer S]	Shows value of Timer S.
[Timer T]	Shows value of Timer T.
[Factor K]	Shows value of Factor K.

Descriptions

Operator	Parameters/Permissions	Description

`modify ilmiconfig`	`[PortNumber]` **`<elannumber>`**
	`[IlmiAddressRegistration]`
	`<ilmiaddressregistration>`
	`[IlmiConnectivity]`
	`<ilmiconnectivity>`
	`[Timer-S]` **`<timers>`**
	`[Timer-T]` **`<timert>`**
	`[Factor-K]` **`<factork>`**
	Administrator
		Sets ILMI timers and functions.

`show ilmiconfig`	`[PortNumber]` **`<elannumber>`** Administrator	Shows status of ILMI timers and functions.

Examples

```
switch prompt # modify ilmiconfig

Port    ILMI Address  ILMI           Timer S   Timer T    Factor K
        Registration  Connectivity  (seconds)  (seconds)
=================================================================
1A1      Enabled       Enabled            1         1         1
1A2      Enabled       Enabled            1         5         4
1A3      Enabled       Enabled            1         5         4
1A4      Enabled       Enabled            1         5         4
3B1      Enabled       Enabled            1         5         4
3B2      Enabled       Enabled            1         5         4
3B3      Enabled       Enabled            1         5         4
CPU     Disabled       Disabled           1         5         4
CPU.1   Disabled       Disabled           1         5         4
4C1      Enabled       Enabled            1         5         4
4C2      Enabled       Enabled            1         5         4
4C3      Enabled       Enabled            1         5         4

switch prompt # modify ilmiconfig
PortNumber()                           : 1a1
IlmiAddressRegistration(enable)        :
IlmiConnectivity(enable)               :
Timer-S(1)                             : 2
Timer-T(5)                             : 7
Factor-K(4)                            : 5

switch prompt #
```

IPAddress

Use IPAddress to change IP addresses of the Ethernet port and IP netmask on the switch.

Operators

`modify`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[IPAddress]	IP address of the Ethernet port.	Dot decimal/ 7-15 characters	No Default
[IPNetMask]	IP netmask of the Ethernet port. Defaults to the appropriate netmask, based on the class of the IP address. Calculated from the first two high bits of the IP address, so it is either 255.0.0.0, 255.255.0.0, or 255.255.255.0. Must be specified only if IP subnets are being used.	Dot decimal/ 7-15 characters	255.0.0.0, 255.255.0.0 or 255.255.255.0.

Descriptions

Operator	Parameters/Permissions	Description
`modify ipaddress`	`[IPAddress]` **`<ipaddress>`** `[IPNetMask]` **`<ipnetmask>`** Administrator	Sets the IP address of the Ethernet port and the IP netmask. You should accept the IP netmask default unless you are experienced with configuring IP subnets.

Examples

```
switch_prompt # modify ipaddress
IPAddress(200.30.72.122) : 1.1.1.11
IPNetMask(255.255.255.0) :
Confirm(y/n)?: y
Changing IP Address on System. Telnet Session (if any) will be lost.
switch_prompt #
```

IPATMARP

Use IPATMARP to display the ARP server table for an IP/ATM VLAN. The ARP server table contains mappings of IP to ATM addresses for destination clients on the VLAN.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[ClientNumber]	Number of the IP/ATM client on the switch that is the acting as the ARP server.	0-127 or All	All

Output Parameter	Description
[IP Address]	IP address of the IP/ATM destination client .
[ATM Address]	ATM address of the IP/ATM destination client.

Descriptions

Operator	Parameters/Permissions	Descriptions
show ipatmarp	[ClientNumber] **<clientnumber>** All	Displays the ARP entries associated with active IP/ATM clients which are IP/ATM servers.

Examples

```
switch_prompt # show ipatmarp
ClientNumber(ALL):
IP/ATM Server 1 ARP Table

IP Address       ATM Address
================================================================================
11.1.1.3         39:00:00:00:00:00:00:00:20:D4:14:22:80:00:00:0B:01:01:03:00

switch_prompt #
```

IPATMClient

Use IPATMClient to add or modify IP/ATM clients on the switch. Any of the clients can act as an ARP server.

Note Use the Client attribute to delete, restart, or show IP/ATM clients.

Operators

`add, modify`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[ClientNumber]	Number of the client.	0-127	0
[ServerType]	IP/ATM server type. Possible values are: Local, External, or None. Local means the client is an ARP server for a VLAN on this switch. External means the client is an ARP server for another switch.	Local, External, None	None
[ServerAddress]	ATM address of the IP/ATM server. If ServerType is None or Local, then enter the default (Local means the client also acts as an IP/ATM server for that VLAN). If ServerType is External, enter the ATM address of the external server.	13-20 byte hex-based/ Up to 59 characters	No default
[IPAddress]	IP address of the client.	Dot decimal/ 7-15 characters	No default
[NetMask]	IP netmask of the client. This parameter defaults to the appropriate netmask, based on the class of IP address. You must specify NetMask only if IP subnets are used.	Dot decimal/ 7-15 characters	255.0.0.0, 255.255.0.0 or 255.255.255.0
[MTU]	Maximum transfer unit assigned for this client.	64 to 10160	9180

Descriptions

Operator	Parameters/Permissions	Description
add ipatmclient	[ClientNumber] **<clientnumber>** [ServerType] **<servertype>** [ServerAddress] **<serveraddress>** [IPAddress] **<ipaddress>** [NetMask] **<netmask>** [MTU] **<maxtransferunit>** Administrator	Creates a new IP/ATM client on the switch. If the circuits in this VLAN are SVCs, and if you want to use this client as the ARP server, enter **local** for the server type. If you do not want to use this client as the ARP server, enter **external** as the server type, and use the address of any configured ARP server as the server address. If adding an IP/ATM client in a PVC-only environment, enter **none** for the server type.
modify ipatmclient	[ClientNumber] **<clientnumber>** [ServerType] **<servertype>** [ServerAddress] **<serveraddress>** [IPAddress] **<ipaddress>** [NetMask] **<netmask>** [MTU] **<maxtransferunit>** Administrator	Modifies an existing local IP/ATM client on the switch.
show client	[ClientNumber] **<clientnumber>** All	Displays all or specified clients on the switch. Enter **show client** to establish the activity of all the different client types on the switch.

Examples

```
switch_prompt # add ipatmclient
ClientNumber(0)   : 50
ServerType(NONE)  : local
ServerAddr()      :
IpAddr()          : 101.1.1.50
NetMask(255.0.0.0):
MTU(9180)         :
switch_prompt #

switch_prompt # add ipatmclient
ClientNumber(0) : 1
ServerType(NONE): external
ServerAddress() :39:00:00:00:00:00:00:00:20:D4:14:2F:00:00:00:0A:01:01:02:00
IPAddress()     : 10.1.1.1
NetMask(255.0.0.0):
MTU(9180)       :
switch_prompt #

switch_prompt # add ipatmclient
ClientNumber(0)   : 60
ServerType(NONE)  :
ServerAddr()      :
IpAddr()          : 101.1.1.60
NetMask(255.0.0.0):
MTU(9180)         :
switch_prompt #

switch_prompt # modify ipatmclient
ClientNumber(0)   : 50
ServerType(LOCAL) :
ServerAddr()      :
IpAddr(101.1.1.50): 101.1.1.150
NetMask(255.0.0.0):
MTU(9180)         :

switch_prompt # show client

switch_prompt #
```

IPATMPVC

Use IPATMPVC to manage IP/ATM PVCs.

Operators

`add, delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ClientNumber]	Number of the client.	0-127 or All	All
[DestinationIP]	Destination IP address of external IP/ATM client.	Dot decimal/ 7-15 characters	No default
[DestinationVPI]	VPI on CPU port to reach a particular IP/ATM client.	0-maximum	0
[DestinationVCI]	VCI on CPU port to reach a particular IP/ATM client.	0-maximum	33

Output Parameter	Description
[IP Address]	IP address of the client.
[VPI/VCI]	VPI/VCI values of control direct VCC or multicast send VCC.

Descriptions

Operator	Parameters/Permissions	Description
add ipatmpvc	[ClientNumber] **<clientnumber>** [DestinationIP] **<destinationIP>** [DestinationVPI]**<destinationVPI>** [DestinationVCI]**<destinationVCI>** Administrator	Creates an IP/ATM PVC. To achieve this, you must first enter **add pvc** then **add ipatmclient** for a new client (see "IPATMClient" for more details). You can then enter **add ipatmpvc**.
delete ipatmpvc	[ClientNumber] **<clientnumber>** [DestinationIP] **<destinationIP>** Administrator	Removes the specified IP/ATM PVC.
show ipatmpvc	[ClientNumber] **<clientnumber>** Administrator	Displays the details of an IP/ATM PVC.

Examples

```
switch_prompt # add pvc

ConnType(PTP)                          :
Port-1-Number()                        : 1a1
Port-1-VPCI                            : 0
Port-1-VCI()                           : 130
Port-2-Number()                        : cpu
Port-2-VPCI()                          : 0
Port-2-VCI()                           : 130
Port1-to-Port2TrafficDescriptorIndex() : 1
Port2-to-Port1TrafficDescriptorIndex() : 1

switch_prompt #

switch_prompt # show pvc
PortNumber(ALL)                          :
CrossConnectId(ALL)                      :
CrossConnectSubId(ALL)                   :

=========================================================================
Conn Conn  |         Low           |         High             | Admin
Id   SubId | Port   VPCI  VCI  Type| Port   VPCI  VCI    Type | Status
=========================================================================
2    1       1A1     0    130  PTP   CPU     0    130    PTP    UP

Total number of PVCs = 1

switch_prompt #
```

```
switch_prompt #  add ipatmclient
ClientNumber(0)                          :
ServerType(NONE)                         :
ServerAddress()                          :
IPAddress()                              : 10.1.1.2
NetMask(255.0.0.0)                       :
MTU(9180)                                :
switch_prompt #
switch_prompt #  show client 0

IP/ATM Client 0
================================================================================
Client State      : Operational
Client Address    : 39:00:00:00:00:00:00:00:20:D4:14:22:80:00:00:0A:01:01:02:00
Server            : is none
MTU               : 9180
IP Address        : 10.1.1.2
IP NetMask        : 255.0.0.0
switch_prompt #

switch_prompt #   add ipatmpvc
ClientNumber(0)                          :
DestinationIP()                          : 10.1.1.7
DestinationVPI(0)                        :
DestinationVCI(33)                       : 130
switch_prompt #


switch_prompt #   show ipatmpvc 0

IP/ATM Client 0 PVC Table
IP Address         VPI/VCI
================================================================================
10.1.1.7             0/130
switch_prompt #

switch_prompt #    delete ipatmpvc
ClientNumber(0) :
DestinationIP() : 10.1.1.7
Confirm(y/n)?: y
switch_prompt #
```

IPATMStat

Use IPATMStat to display statistics for an IP/ATM client that acts as an ARP server.

Operator

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[ClientNumber]	Number of the client.	0-127 or All	All

Output Parameter	Description
[Client]	Number of the client. (Same as the [ClientNumber] input parameter.)
[ARP Requests Recvd]	ARP requests from a client received by the server.
[ARP Replies Sent]	ARP replies from the server sent to the client.
[InARP Requests Sent]	Inverse ARP requests from the server sent to the client.
[InARP Replies Recvd]	Inverse ARP replies from a client received by the server.
[InARP Unreachables]	Inverse ARP unreachable clients.
[InNARP NAKs]	Number of inverse ARP NAKs received.

Descriptions

Operator	Parameters/Permissions	Description
show ipatmstat	[ClientNumber] **<clientnumber>** All	Displays statistics associated with the IP/ATM ARP server.

Examples

```
switch_prompt # show ipatmstat
ClientNumber(ALL):

Client      ArpReqs    ArpReps   ArpUnrch    ArpNaks
================================================================================
   50          0          0          0          0
   51          0          0          0          0
switch_prompt #

switch_prompt # show ipatmstat 50

Stats for IP/ATM server 50
================================================================================
ARP Requests Recvd  :         0
ARP Replies Sent    :         0
InARP Requests Sent :         0
InARP Replies Recvd :         0
InARP Unreachables  :         0
InARP NAKs          :         0
switch_prompt #
```

LANEClient

Use LANEClient to add or modify LANE clients on the switch. (Add a LANE client on the switch if you want to access the switch console using LANE.)

Note Use the Client attribute to delete, restart, or show LANE clients.

Operators

`add, modify`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ClientNumber]	Number of the client.	0-127	0
[LanName]	Name of the ELAN for this client to join.	Up to 32 characters	
[ServerType]	Type of LANE server.	LECS, LES	LECS
[ServerAddress]	ATM Address of the LANE server or LECS. If at a local server, enter the switch ATM address.	13-20 byte hex-based/ Up to 59 characters	Registered LECS address
[IPAddress]	IP address of the client.	Dot decimal/ 7-15 characters	No default
[NetMask]	IP netmask of the client. Defaults to the appropriate netmask, based on the class of the IP address (calculated from the first two high bits of the IP address, so it is either 255.0.0.0, 255.255.0.0, or 255.255.255.0). IP netmask must be specified only if IP subnets are used.	Dot decimal/ 7-15 characters	255.0.0.0, 255.255.0.0, or 255.255.255.0.
[MTU]	Maximum transfer unit for the client.	1516, 9234, None	1516

Description

Operator	Parameters/Permissions	Description
add laneclient	[ClientNumber] **<clientnumber>** [LanName] **<lanname>** [ServerType] **<servertype>** [ServerAddress] **<serveraddress>** [IPAddress] **<ipaddress>** [NetMask] **<netmask>** [MTU] **<maxtransferunit>** Administrator	Creates a new LANE client on the switch. Add a LANE client if you want to access the switch command console using LANE.
modify laneclient	[ClientNumber] **<clientnumber>** [LanName] **<lanname>** [ServerType] **<servertype>** [ServerAddress] **<serveraddress>** [IPAddress] **<ipaddress>** [NetMask] **<netmask>** [MTU] **<maxtransferunit>** Administrator	Changes an existing LANE client on the switch.
show client	[ClientNumber] **<clientnumber>** All	Displays all or specified LANE clients on the switch.

Examples

```
switch_prompt # add laneclient
ClientNumber(0) :100
LanName(ELAN100):
ServerType(LECS):
ServerAddress() :39:00:00:00:00:00:11:11:11:11:11:11:11:00:11:22:22:44:55:01
IPAddress()     :101.1.1.100
NetMask(255.0.0.0):
MTU(1516)       :
switch_prompt #

switch_prompt # modify laneclient
ClientNumber(0) : 100
LanName(ELAN100): New100
ServerType(LECS):
ServerAddress() :39:00:00:00:00:00:11:11:11:11:11:11:11:00:11:22:22:44:55:01
IPAddress(101.1.1.100):
NetMask(255.0.0.0):
MTU(1516)       :
switch_prompt #
```

LECMcast

Use LECMcast to display multicast groups registered by a LANE client.

Operators

show

Parameters.

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	ELAN number.	0-125	0
[LECId]	LEC ID of the client.	1-65279 or All	All

Output Parameter	Description
[Mcastid]	BUS identification for the multicast group (range is 2-64).
[Group Macaddress]	Multicast group MAC address.
[MCAST Send VPI/VCI]	Selective multicast Send VCC established by the client.

Descriptions

Operator	Parameters/Permissions	Description
show lecmcast	[ELANNumber] **<elannumber>** [LECId] **<lecid>** Administrator	Displays registered multicast groups.

Examples

```
switch_prompt # show lecmcast 0
LECId(0)                                :

LECID:2, ATMADDR: 39:00:00:00:00:00:00:00:00:00:28:E8:80:00:00:1D:6B:6E:CC:01
--------------------------------------------------------------------------

McastId                                 : 2
Group MAC Address                       : 01:80:C2:00:00:00
MCAST SEND  VPI/VCI                     : 0/108


LECID:3, ATMADDR: 39:00:00:00:00:00:00:00:00:00:28:E8:80:00:00:1D:5E:14:D4:01
 ------------------------------------------------------------------------

McastId                                 : 2
Group MAC Address                       : 01:80:C2:00:00:00
MCAST SEND  VPI/VCI                     : 0/128

switch_prompt #
```

LECS

Use LECS to manage the LECS on the network.

Operators

`show, start, stop`

Parameters

This attribute has no parameters. Just enter **`start lecs`** or **`stop lecs`** at the switch prompt.

Descriptions

Operator	Parameters/Permissions	Description
show lecs	All	Displays LECS status.
`start lecs`	Administrator	Starts an LECS not previously started. If you have stopped an LECS, you must restart it before adding ELANs to the LECS or clients to the ELAN. You normally keep only one LECS in your network, across all ELANs and switches. Creating more than one LECS functionally splits the network unless the databases are fully replicated.
`stop lecs`	Administrator	Shuts down the LECS on the network.

Note The status of the LECS is persistent on reboot. If you reboot the switch while you have the LECS stopped, it will remain stopped after rebooting.You have to manually start the LECS again.

Examples

```
switch_prompt # start lecs

NOTICE - 'LECS' ***** LECS started *****
switch_prompt #

switch_prompt # stop lecs

confirm (y/n)?: y
NOTICE - 'LECS' ***** LECS shutdown *****
switch_prompt #
```

LECSELAN

Use LECSELAN to manage ELAN entries at the LECS.

Operators

`add, delete, modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	Number of the ELAN to add to the LECS.	0-125	0
[ELANName]	Name of ELAN to add to the LECS.	Up to 32 characters	No default
[LESAddress]	Address of the LES associated with the ELAN.	13-20 byte hex-based/ 59 characters	No default
[ELANType]	The data-link type used by the ELAN.	802.3 (Ethernet), 802.5 (Token Ring)	802.3
[MTU]	Maximum transfer unit for the clients joining this ELAN.	1516, 1580, 4544, or 9234	1516 or 4544
[TLVSet]	The TLV (type, length, and value) set number (set of TLV parameters) corresponding to the members joining this ELAN.	1-32767	No default

Output Parameter	Description
[ELAN Number]	Number of the ELAN to add to the LECS.
[ELAN Name]	Name of ELAN to add to the LECS.
[LES Address]	Address of the LES associated with the ELAN.
[ELAN Type]	The data-link type used by the ELAN.
[MTU]	Maximum transfer unit for the clients joining this ELAN.

Descriptions

Operator	Parameters/Permissions	Description
add lecselan	[ELANNumber] **<elannumber>** [ELANName] **<elanname>** [LESAddress] <**lesatmaddress**> [ELANType] <**elantype**> [MTU] <**maxframesize**> [TLVSet] <**tlvsetid**> Administrator	Creates a specified ELAN on the LECS. Enter **add lecselan** to add an ELAN the long way—with the **add buselan, add leselan,** and **add lecselan** commands. Enter **show elan** before this command to display the LES address to be added to the LECS.
delete lecselan	[ELANNumber] **<elannumber>** Administrator	Removes an existing ELAN from the LECS.
modify lecselan	[ELANNumber] <**elannumber**> [ELANName] <**elanname**> [LESAddress] <**lesatmaddress**> [ELANType] <**elantype**> [MTU] <**maxframesize**> [TLVSet] <**tlvsetid**> Administrator	Modifies the parameters of a specified ELAN on the LECS by deleting and then recreating the ELAN. Enter **modify lecselan** if you are moving an ELAN and have a new LES and BUS ATM address to assign to the ELAN (or if you want to change the ELAN type).
show lecselan	[ELANNumber] <**elannumber**> All	Displays a specified ELAN configuration on the LECS.

Examples

```
switch_prompt # add lecselan
ELANNumber(0)                           : 4
ELANName(ELAN004)                       :
LESAddress(39:00:00:00:00:00:00:00:00:00:14:15:00:00:20:D4:14:15:04:02):
ELANType(802.3)                         :
MTU(1516)                               :
TLVSet()                                :

switch_prompt #

switch_prompt # delete lecselan
ELANNumber(0)                           : 4

ELAN 4 Configured on LECS
================================================================================
ELAN Number       : 4
ELAN Name         : ELAN004
LES Address       : 39:00:00:00:00:00:00:00:00:00:14:15:00:00:20:D4:14:15:04:02
ELAN Type         : 802.3
MTU               : 1516
Confirm(y/n)?:y
switch_prompt #

switch_prompt # modify lecselan
ELANNumber(0)                           :
ELANName(elan1)                         :
LESAddress(39:00:00:00:00:00:00:00:00:00:14:15:00:00:20:D4:14:15:00:02):
39:00:00:00:00:00:00:00:00:00:14:15:00:00:20:D4:14:15:00:04
ELANType(802.3)                         :
MTU(1516)                               :
TLVSet()                                :

switch_prompt #

switch_prompt # show lecselan
ELANNumber(ALL)                         :

All the ELANs Configured on the LECS
================================================================================
ELAN Number       : 0
ELAN Name         : elan1
LES Address       : 39:00:00:00:00:00:00:00:00:00:14:15:00:00:20:D4:14:15:00:04
ELAN Type         : 802.3
MTU               : 1516

switch_prompt #
```

LECSELANLEC

Use LECSELANLEC to manage the way an LECS configures (assigns) a LANE client to an ELAN using the byBestEffort assignment policy. At least one instance of the byBestEffort assignment policy is always in effect at the lowest priority level. Under the byBestEffort policy, client assignment is based on (in this order): ELAN name in the configuration request (if any), client IP address, client MAC address (or for a token ring client, route descriptor), client ATM address. LECSELANLEC also associates a TLV parameter set with the specified LANE client. After the client is assigned to an ELAN, the LECS uses the TLV information to negotiate the quality of connection given the client by the ELAN.

Note Use LECSELANPolicy to set and manage ELAN assignment policies.

Operators

`add, delete, modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ATMAddress]	ATM address of the client.	13-20 byte hex-based/ Up to 59 characters	No default
[MACAddress/ RouteDesc]	MAC (media access control) address/Route Descriptor of the client.	SegId: 0-4095 Bridge Num: 0-15	No default
[Layer3Address(IP)]	IP address of the client.	Dot decimal/ 7-15 characters	No default
[ELANNumber]	Number of the ELAN preferred for the client.	0-125	0
[TLVSet]	TLV set number associated with the client.	1-32767	No default

Output Parameter	Description
[Elan #]	Number of the ELAN preferred for the client. (Same as the [ELANNumber] input parameter.)

Output Parameter	Description
[MacAddr/ RouteDesc]	MAC (media access control) address/Route Descriptor of the client. (Same as the [MACAddress/RouteDesc] input parameter).
[LECAddress]	ATM address of the client.
[IP Address]	IP address of the client.
[TLV Set]	TLV set associated with the client.

Descriptions

Operator	Parameters/Permissions	Description
add lecselanlec	[LECAddress] <**clientatmaddress**> [MACAddress/RouteDesc] **<clientmacaddress/routedescriptor>** [ELANNumber] <elannumber> Administrator	Maps a LANE client to a preferred ELAN and TLV set. The client must have unique IP, ATM, and MAC address for an entry to be accepted. You do not have to all addresses, but whatever you specify has to be unique. The addresses must be added before entering this command because you cannot modify these address parameters once they are set. If modification is needed, you must first enter **delete lecselanlec**, and then create another LECSELANLEC by entering **add lecselanlec.**
delete lecselanlec	[LECAddress/MACAddress/RouteDesc] **<clientatm/macaddress/routedescriptor>** Administrator	Removes a LANE client entry from the LECS. The length of the address (ATM, MAC, Route Descriptor) that you specify determines which LANE client entry is deleted.
modify lecselanlec	[LECAddress/MACAddress/RouteDesc] **<clientatm/macaddress/routedescriptor>** [ELANNumber] **<elannumber>** Administrator	Changes the LANE client information at the LECS. You only can modify the ELAN number with this command. The only way to change client addresses with this command is to enter **delete lecselanlec** and then enter **add lecselanlec,** adding the new addresses within that command.
show lecselanlec	[ELANNumber] **<elannumber>** All	Displays the LANE clients configured on an existing ELAN. You can see the ATM and MAC addresses of LANE clients by entering this command.

Examples

```
switch_prompt # add lecselanlec
LECAddress: 39:00:00:00:00:00:00:00:00:00:14:7B:00:00:20:D4:14:7B:00:01
MACAddress/RouteDesc: 01:02:03:04:05:06
ELANNumber(0):1
switch_prompt #

switch_prompt # delete lecselanlec
LECAddress/MACddress/RouteDesc(): 39:00:00:00:00:00:00:00:20:D4:14:05:80:11:22:33:44:55:66:00
ELANNum       :10
Confirm(y/n): y
switch_prompt #

switch_prompt # show lecselanlec
ELANNumber(ALL): 1
Elan#  MacAddr/RouteDesc LECAddress
================================================================================
1      01:02:03:04:05:06
       39:00:00:00:00:00:00:00:00:00:14:7B:00:00:20:D4:14:7B:00:01
switch_prompt #

switch_prompt # modify lecselanlec
LECAddress/MACddress/RouteDesc: 01:02:03:04:05:06
ELANNumber(0): 2
switch_prompt #

switch_prompt # show lecselanlec
ELANNumber(ALL): 2

Elan#  MacAddr/RouteDesc LECAddress
================================================================================
2      01:02:03:04:05:06
       39:00:00:00:00:00:00:00:00:00:14:7B:00:00:20:D4:14:7B:00:01
switch_prompt #
```

LECSELANNameTable

Use LECSELANNameTable to manage the ELAN name table. The table maps names with ELAN numbers. The table determines how an LECS assigns a LANE client to an ELAN using the byELANName assignment policy.

Note Use LECSELANPolicy to manage ELAN assignment policies.

Operators

`add, delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	ELAN number to map to a name.	0-125	0
[ELANName]	Name for the ELAN.	Up to 32 characters	No default

Output Parameter	Description
[ELAN ID]	ELAN number. (Same as [ELANNumber] input parameter.)
[ELAN Name]	Name for the ELAN.

Descriptions

Operator	Parameters/Permissions	Description
`add lecselannametable`	`[ELANNumber]` **`<elannumber>`** `[ELANName]` **`<elanname>`** Administrator	Adds an entry to the ELAN name table.

Operator	Parameters/Permissions	Description
delete lecselannametable	[ELANNumber] **<elannumber>** [ELANName] **<elanname>** Administrator	Deletes an entry from the ELAN name table.
show lecselannametable	All	Displays the ELAN name table.

Examples

```
switch_prompt # show lecselannametable

ELAN ID  ELAN Name
================================================================================
   0         ELAN1

switch_prompt #
```

LECSELANPolicy

Use LECSELANPolicy to manage the ELAN assignment policy table. ELAN policies determine how LANE clients are configured (assigned) to ELANs by the LECS. The LECS uses the policy with the highest priority first, the policy with the second highest priority next, and so on. If the LECS cannot make an assignment using any of the policies, the client is assigned to the default ELAN. If there is no default ELAN, the configuration request is dropped.

Note The ELAN policy table allows you to set up priorities for each of the policies. Priorities are numbers in the range 1-65000. Lower numbers represent higher priorities. If more than one policy is set up to have the same priority, then each of the policies must be able to assign the client to the same ELAN. If that is not the case, the next lower priority policy is used to decide the assignment.

Operators

`add, delete, modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[PolicyIndex]	User-defined index number.	1-6500	No default
[Type]	Policy type (see Table 2-4).	1-7: byBestEffort (1), byATMAddress (2), byMacAddress (3), byRouteDescriptor (4), byLANType (5), byPacketSize (6), byELANName (7)	No default
[Priority]	Priority of the policy type. Lower numbers represent higher priorities.	1-65000	No default

Output Parameter	Description
[Index]	User-defined index number. (Same as the [PolicyIndex] input parameter.)
[Assignment Policy]	Policy type. (Same as the [Type] input parameter.)
[Priority Value]	Priority of the policy type. (Same as the [Priority] input parameter.)

Descriptions

Operator	Parameters/Permissions	Description
add lecselanpolicy	[PolicyIndex] **<policyindex>** [Type] **<type>** [Priority] **<priority>** Administrator	Adds an entry to the ELAN policy table.
delete lecselanpolicy	[PolicyIndex] **<policyindex>** Administrator	Deletes an entry from the ELAN policy table.
modify lecselanpolicy	[PolicyIndex] **<policyindex>** [Type] **<type>** [Priority] **<priority>** Administrator	Modifies an entry in the ELAN policy table.
show lecselanpolicy	All	Displays the ELAN policy table.

Table 2-4 ELAN Assignment Policies

Policy Type	Description
1 (byBestEffort)	This is a proprietary assignment policy. By this policy, if the client configuration request specifies a preferred ELAN name, the LECS attempts to assign the client to the corresponding ELAN number. If no name is specified, the following information is used in sequence to assign the client to an ELAN number: layer 3 (IP) address, MAC address (or, for a token ring client, route descriptor), ATM address. If the above three fail, the LECS assigns the client to the default ELAN. At least one instance of this policy is always in effect at the lowest priority level.
2 (byATMAddress)	The LECS assigns the client based on information set up in the ATM address table. Use LECSELANLEC to manage entries in this table.
3 (byMacAddress)	The LECS assigns the client based on information set up in the MAC address table. Use LECSELANLEC to manage entries in this table.
4 (byRouteDescriptor)	The LECS assigns the client based on information set up in the Route Descriptor table. Use LECSELANLEC to manage entries in this table.
5 (byLANType)	The LECS assigns the client based on the LAN type specified by the client configuration request.
6 (byPacketSize)	The LECS assigns the client based on information set up in the ELAN Packet Size table. Use LECSPacketSizes to manage entries in this table.
7 (byELANName)	The LECS assigns the client based on information set up in the ELAN Name table. Use LECSELANNameTable to manage entries in this table.

Examples

```
switch_prompt # show lecselanpolicy

 Index   Assignment Policy           Priority Value
================================================================================
    1    Best Effort (Proprietary)        65001
    2    By ATM Address                   2000
    7    By Route Descriptor              4000
    4    By LAN Type                      5000
    10   By Packet Size                   6000

switch_prompt #

switch_prompt # add lecselanpolicy
PolicyIndex()                           : 3
Type()                                  : 3
Priority()                              : 3000

switch_prompt #

switch_prompt # delete lecselanpolicy
PolicyIndex()                           : 7

switch_prompt #

switch_prompt # modify lecselanpolicy
PolicyIndex()                           : 10
Type()                                  :
Priority()                              : 7000

switch_prompt #

switch_prompt # show lecselanpolicy

 Index   Assignment Policy           Priority Value
================================================================================
    1    Best Effort (Proprietary)       65001
    2    By ATM Address                   2000
    3    By MAC Address                   3000
    5    By LAN Type                      5000
    10   By Packet Size                   7000

switch_prompt #
```

LECSErrorLog

Use LECSErrorLog to display the log maintained by the LECS to track configuration request failures. You can control the log using LECSErrorLogControl.

Note The log can contain up to 128 entries. After 128 entries, no additional entries are logged until all current entries are deleted.

Operators

`delete, show`

Parameters

This attribute has no input parameters.

Output Parameter	Description
[ATM Address]	ATM address of the client associated with the error.
[ErrorCode]	Decimal code that shows why the error occurred (see Table 2-5).
[SysUpTime]	Time the error occurred with respect to switch up-time in hours, seconds, minutes.

Descriptions

Operator	Parameters/Permissions	Description
`delete lecserrorlog`	Administrator	Deletes all entries in the LECS error log.
`show lecserrorlog`	All	Displays the LECS error log.

Table 2-5 LECSErrorLog Error Codes

Code	Name	Meaning
0	Success	Successful Response
1	Version not supported	VERSION field of request contains a value higher than that supported.
2	Invalid request parameters	The parameters given are incompatible with the ELAN.
4	Duplicate LAN destination registration	SOURCE-LAN-DESTINATION duplicates a previously-registered LAN destination.
5	Duplicate ATM address	SOURCE-LAN-DESTINATION duplicates a previously-registered ATM address.
6	Insufficient resources to grant request	Responder is unable to grant request for reasons such as insufficient table space or ability to establish VCCs.
7	Access denied	Request denied for security reasons.
8	Invalid REQUESTOR-ID	LECID field is not zero.
9	Invalid LAN destination	LAN destination is a multicast address; or, LAN destination is a route descriptor on an Ethernet/802.3 ELAN.
10	Invalid ATM address	Source or target ATM address is not in a recognizable format or is not valid.
20	No configuration	LE client is not recognized.
21	LE_CONFIGURE Error	Parameters supplied give conflicting answers. May also be used to refuse service without giving a specific reason.
22	Insufficient information	LE client has not provided sufficient information to allow the LECS to assign it to a specific ELAN.
24	TLV not found	There are no TLVs present in the set of TLVs for this emulated LAN that can be returned with the Config-Frag-Info TLV passed in the LE_CONFIGURE_REQUEST message.

Examples

```
switch_prompt # delete lecserrorlog

switch_prompt #

switch_prompt # show lecserrorlog

ATM Address                                                    ErrorCode SysUpTime
================================================================================
39:00:00:00:00:00:00:00:00:00:14:17:80:00:20:d4:14:17:80      20      02:21:10

switch_prompt #
```

LECSErrorLogControl

Use LECSErrorLogControl to control the LECS error log. The LECS error log contains information on LECS configuration request failures.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ErrorLogStatus]	Enables or disables the LECS error log	Enable, Disable	No default

Output Parameter	Description
[Administrative Status]	Administrative status of the LECS error log. Possible values are enabled or disabled. (Same as the [ErrorLogStatus] input parameter.)
[Operation Status]	Operational status of the LECS error log. Possible values are enabled or disabled.
[Log Last Entry Index]	Index of last entry in the log. The log can contain up to 128 entries. The entries are written in top-down order (starting with index 128, then 127, 126, 125, and so forth). After 128 entries, no additional entries are logged until all current entries are deleted. Use the **`delete lecserrorlog`** command to delete all entries.

Descriptions

Operator	Parameters/Permissions	Description
`modify lecserrorlogcontrol`	`[ErrorLogStatus]` **`<errorlogstatus>`** Administrator	Enables or disables the LECS error log.
`show lecserrorlogcontrol`	All	Displays LECS error log control information.

Examples

```
switch_prompt # set lecserrorlogcontrol
ErrorLogStatus(Disabled)           : enable

switch_prompt #

switch_prompt # show lecserrorlogcontrol

Administrative Status : Disabled
Operation Status      : Disabled
Clear Log Flag        : No operation
Log Max Entries       : 128
Log Last Entry Index  : 0

switch_prompt #
```

LECSPacketSizes

Use LECSPacketSizes to manage the ELAN packet size table. The table maps packet sizes (MTUs) with ELAN numbers. The table determines how an LECS assigns a LANE client to an ELAN using the byPacketSize assignment policy.

Note Use LECSELANPolicy to manage ELAN assignment policies.

Operators

`add, delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	ELAN number to map to a packet size.	0-125	0
[PacketSize]	Packet size to associate with the ELAN number.	0 (unspecified), 1516, 4544, 9234, 18190	0

Output Parameter	Description
[ELAN ID]	ELAN number to use for the packet size request. (Same as the [ELANNumber] input parameter.)
[Packet Size]	Packet size associated with the ELAN number.

Descriptions

Operator	Parameters/Permissions	Description
add lecspacketsizes	[ELANNumber] **<elannumber>** [PacketSize] **<packetsize>** Administrator	Adds an entry to the packet size table.
delete lecspacketsizes	[ELANNumber] **<elannumber>** [PacketSize] **<packetsize>** Administrator	Deletes an entry from the packet size table.
show lecspacketsizes	Administrator	Displays entries in the packet size table.

Examples

```
switch_prompt # add lecspacketsizes
ELANNumber(0)                          : 1
PacketSize(0)                          : 1516

switch_prompt #

switch_prompt # delete lecspacketsizes
ELANNumber(0)                          : 1
PacketSize(0)                          : 1516

switch_prompt #

switch_prompt # show lecspacketsizes

ELAN ID  Packet Size
================================================================================
   0         0 (implies "unspecified")
   1         1516
   1         4544
   2         9234
   2         18190

switch_prompt #
```

LECSStat

Use LECSStat to display statistics on configuration requests to the LECS.

Operator

show

Parameters

This attribute has no input parameters.

Output Parameter	Description
[Successful Configuration Requests]	Number of successful configuration requests.
[Bad Configuration Requests]	Number of bad configuration requests.
[Invalid Request Parameters]	Number of configuration requests with invalid request parameters.
[Insufficient Resources]	Number of configuration requests LECS could not process due to insufficient resources.
[Access Denied]	Number of configuration requests for which LECS denied access to assign an ELAN.
[Invalid Requester Ids]	Number of configuration requests with invalid requester IDs.
[Invalid Destination]	Number of configuration requests with an invalid destination address.
[Invalid Address]	Number of configuration requests with an invalid MAC/ATM address.
[No. LEC Configs]	Number of LANE client configuration requests for which LECS could not find configuration.
[Configuration Errors]	Number of configuration request errors.
[Insufficient Information]	Number of configuration requests with insufficient information.

Description

Operator	Parameters/Permissions	Description
show lecstat	All	Displays statistical information about configuration requests to the LECS.

Example

```
switch_prompt # show lecsstat

Statistics on LECS
================================================================================
Successful Configuration Requests : 3
Bad Configuration Requests        : 0
Invalid Request Parameters        : 1
Insufficient Resources            : 0
Access Denied                     : 0
Invalid Requester Ids             : 0
Invalid Destination               : 0
Invalid Address                   : 0
No. LEC Configs                   : 0
Configuration Errors              : 0
Insufficient Information          : 0
switch_prompt #
```

LECSTLVParam

Use LECSTLVParam to remove a TLV parameter from a TLV set on the LECS.

Operators

`delete`

Parameters

Input Parameter	Description	Value/Field Size	Default
[TLVSetNumber]	Identifier of a TLV parameter set on the LECS.	1-32767	1
[TLVIndex]	Identifier of a specific TLV in the TLV set.	1-15	1

Output Parameter	Description
[TlvIndex]	Number that identifies the specific TLV parameter in the TLV set.
[TLVDescription]	Description of the TLV parameter.
[Value]	Value of the TLV parameter.

Descriptions

Operator	Parameters/Permissions	Description
delete lecstlvparam	[TLVSetNumber] <**tlvsetnumber**> [TLVIndex] <**tlvindex**> Administrator	Removes a TLV parameter from a TLV set on the LECS. Use **show lecstlvset** before entering this command, so you know the index number of the TLV parameter you want to delete.

Examples

The **show lecstlvset** example is used here to show how **delete lecstlvparam** works. Observe that [2] in **show lecstlvset** is [Max Unknown Frame Time]. That is why [Max Unknown Frame Time] appears in **delete lecstlvparam** when "2" is entered at the [TLVIndex] prompt.

```
switch_prompt # show lecstlvset

TlvsetNumber(ALL)                          :2
             TlvIndex  TlvDescription               Value
================================================================================
TLVSet 2 :
             1         Control Timeout              200
             2         Max Unknown Frame Time       4
             6         Arp Aging Time               250
             7         Forward Delay                30
switch_prompt #

switch_prompt # delete lecstlvparam
TlvsetNumber()                             : 2
TlvIndex()                                 : 2

             TLVIndex  TLVDescription               Value
================================================================================
             2         Max Unknown Frame Count      4
Confirm(y/n)?:y
switch_prompt #
```

LECSTLVSet

Use LECSTLVSet to manage TLV parameters on the LECS. A TLV set is a collection of TLV parameters associated with an ELAN.

Operators

`add, delete, modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[TLVSetNumber]	Number that identifies the set of TLV parameters on the LECS.	1-32767	1
[ControlTimeout]	Time-out period used for timing out most request/response control-frame interactions.	10-300 seconds	No default
[MaxUnknownFrameCount]	Total counter frames a LANE client will send to the LECS for a given unicast LAN destination.	1-10	No default
[MaxUnknownFrameTime]	Total time frames a LANE client will send the LECS for a given unicast LAN destination.	1-160 seconds	No default
[VCCTimeout]	Time-out period for releasing a data direct VCC on an LEC if it has not been used to transmit or receive any data.	0-65535 seconds	No default
[MaxRetryCount]	Maximum number of times a LEC should try for a given LAN destination.	0-2	No default
[ArpAgingTime]	Maximum time that a LEC maintains an entry in its cache in the absence of updates.	10-300 seconds	No default
[ForwardDelay]	Maximum time a LEC will maintain an entry for a non-local MAC address in its cache in the absence of updates.	4-30 seconds	No default
[ArpResponseTime]	Maximum time that the LEC expects a request/response cycle to take.	1-30 seconds	No default

Input Parameter	Description	Value/Field Size	Default
[FlushTimeout]	Time limit on flush response after flush request has been sent, before taking recovery action.	1-4 seconds	No default
[PathSwitchingDelay]	Time since sending a frame to the LECS after which the LANE client may assume that the frame has been either discarded or delivered to the recipient.	1-8 seconds	No default
[LocalSegId]	Segment ID of the ELAN.	0-4095 seconds	No default
[MulticastSendVCCType]	Signaling parameter used by the LEC when establishing multicast send VCC.	0-2	No default
[MulticastSendVCCAvgRate]	Signaling parameter used by the LEC when establishing multicast send VCC.	0-370370 cells/s	No default
[MulticastSendVCCPeakRate]	Signaling parameter used by the LEC when establishing multicast send VCC.	0-370370 cells/s	No default
[ConnectionCompeteTime]	Time period in which data or a message is expected from a calling party when establishing a connection.	1-10 seconds	No default
[MPSKeepAliveTime]	MPS Keep Alive Time.		
[MPSKeepAliveLifeTime]	MPS Keep Alive Life Time.		
[MPSInternetProtocols]	MPS Internetwork Layer Protocols.		
[MPSInitialRetryTime]	MPS Initial Retry Time.		
[MPSRetryTimeMaximum]	MPS Retry Time Maximum.		
[MPSGiveupTime]	MPS Give-up Time.		
[MPSDefaultHoldingTime]	MPS Default Holding Time.		
[MPCSetupFrameCount]	MPC Set-up Frame Count.		
[MPCSetupFrameTime]	MPC Set-up Frame Time.		
[MPCFlowProtocols]	MPC Flow Detection Protocols.		

Input Parameter	Description	Value/Field Size	Default
[MPCRetryTime]	MPC Initial Retry Time.		
[MPCMaxRetryTime]	MPC Retry Time Maximum.		

Output Parameter	Description
[TlvIndex]	Number that identifies the specific TLV parameter in the TLV set.
[TLVDescription]	Description of the TLV parameter.
[Value]	Value of the TLV parameter.

Descriptions

Operator	Parameters/Permissions	Description
add lecstlvset	[TLVSetNumber] <**tlvsetnumber**> [ControlTimeout] <**controltimeout**> [MaxUnknownFrameCount] <**maxunknframecount**> [MaxUnknownFrameTime] <**maxunknframetime**> [VCCTimeout] <**vcctimeout**> [MaxRetryCount] <**maxretrycount**> [ArpAgingTime] <**arpagingtime**> [ForwardDelay] <**forwarddelay**> [ArpResponseTime] <**arpresponsetime**> [FlushTimeout] <**flushtimeout**> [PathSwitchingDelay] <**pathswitchingdelay**> [LocalSegId] <**localsegid**> [MulticastSendVCCType] **<multicastsendvcctype**> [MulticastSendVCCAvgRate] **<multisendvccavgrate**> [MulticastSendVCCPeakRate] **<multicastsendvccpkrate**> [ConnectionCompeteTime] **<connectioncompetetime**> [MPSKeepAliveTime] **<mpskeepalivetime>** [MPSKeepAliveLifeTime] **<mpskeepalivelifetime>** [MPSInternetProtocols] **<mpsinternetprotocols>** [MPSInitialRetryTime] **<mpsinitialretrytime>** [MPSRetryTimeMaximum] **<mpsretrytimemaximum>** [MPSGiveupTime] **<mpsgiveuptime>** [MPSDefaultHoldingTime] **<mpsdefaultholdingtime>** [MPCSetupFrameCount] **<mpcsetupframecount>** [MPCSetupFrameTime] **<mpcsetupframetime>** [MPCFlowProtocols] **<mpcflowprotocols>** [MPCRetryTime] **<mpcretrytime>** [MPCMaxRetryTime] **<mpcmaxretrytime>** Administrator	Creates a TLV set on the LECS.
delete lecstlvset	[TLVSetNumber] <**tlvsetnumber**> Administrator	Removes a TLV set from the LECS.

Operator	Parameters/Permissions	Description
modify lecstlvset	[TLVSetNumber] <**tlvsetnumber**> [ControlTimeout] <**controltimeout**> [MaxUnknownFrameCount]<**maxunknframecount**> [MaxUnknownFrameTime]<**maxunknframetime**> [VCCTimeout] <**vcctimeout**> [MaxRetryCount] <**maxretrycount**> [ArpAgingTime] <**arpagingtime**> [ForwardDelay] <**forwarddelay**> [ArpResponseTime] <**arpresponsetime**> [FlushTimeout] <**flushtimeout**> [PathSwitchingDelay] <**pathswitchingdelay**> [LocalSegId] <**localsegid**> [MulticastSendVCCType] <**multicastsendvcctype**> [MulticastSendVCCAvgRate] <**multicastsendvccavgrate**> [MulticastSendVCCPeakRate] <**multicastsendvccpkrate**> [ConnectionCompeteTime] <**connectioncompetetime**> [MPSKeepAliveTime] **<mpskeepalivetime>** [MPSKeepAliveLifeTime] **<mpskeepalivelifetime>** [MPSInternetProtocols] **<mpsinternetprotocols>** [MPSInitialRetryTime] **<mpsinitialretrytime>** [MPSRetryTimeMaximum] **<mpsretrytimemaximum>** [MPSGiveupTime] **<mpsgiveuptime>** [MPSDefaultHoldingTime] **<mpsdefaultholdingtime>** [MPCSetupFrameCount] **<mpcsetupframecount>** [MPCSetupFrameTime] **<mpcsetupframetime>** [MPCFlowProtocols] **<mpcflowprotocols>** [MPCRetryTime] **<mpcretrytime>** [MPCMaxRetryTime] **<mpcmaxretrytime>** Administrator	Changes an existing TLV set on the LECS.
show lecstlvset	[TLVSetNumber] <**tlvsetnumber**> All	Displays a TLV set on the LECS.

Examples

```
switch_prompt # add lecstlvset
TLVSetNumber[1-32767](1)                 : 3
ControlTimeout[10-300]()                 : 200
MaxUnknownFrameCount[1-10]()             : 5
MaxUnknownFrameTime[1-60]()              : 50
VCCTimeout[0-65535]()                    : 50000
MaxRetryCount[0-2]()                     : 1
ArpAgingTime[10-300]()                   : 250
ForwardDelay[4-30]()                     : 27
ArpResponseTime[1-30]()                  : 27
FlushTimeout[1-4]()                      : 2
PathSwitchingDelay[1-8]()                : 2
LocalSegId[0-4095]()                     : 2000
MulticastSendVCCType[0-2]()              : 1
MulticastSendVCCAvgRate[0-370370]()      :
MulticastSendVCCPeakRate[0-370370]()     :
ConnectionCompeteTime[1-10]()            : 8
MPSKeepAliveTime()                       :
MPSKeepAliveLifeTime()                   :
MPSInternetProtocols()                   :
MPSInitialRetryTime()                    :
MPSRetryTimeMaximum()                    :
MPSGiveupTime()                          :
MPSDefaultHoldingTime()                  :
MPCSetupFrameCount()                     :
MPCSetupFrameTime()                      :
MPCFlowProtocols()                       :
MPCRetryTime()                           :
MPCMaxRetryTime()                        :
switch_prompt #

switch_prompt # delete lecstlvset
TlvsetNumber(1): 2

             TlvIndex  TlvDescription               Value
================================================================================
TLVSet 2 :
             1         Control Timeout              200
             3         Max Unknown Frame Time       2
             6         Arp Aging Time               250
             7         Forward Delay                30
Confirm(y/n)?:y
switch_prompt #
```

```
switch_prompt # modify lecstlvset
TLVSetNumber[1-32767](1)                 : 3
ControlTimeout[10-300](200)              : 250
MaxUnknownFrameCount[1-10](5)            : 4
MaxUnknownFrameTime[1-60](50)            : 40
VCCTimeout[0-65535](50000)               : 40000
MaxRetryCount[0-2](1)                    : 2
ArpAgingTime[10-300](250)                : 200
ForwardDelay[4-30](27)                   : 20
ArpResponseTime[1-30](27)                : 20
FlushTimeout[1-4](2)                     : 3
PathSwitchingDelay[1-8](2)               : 5
LocalSegId[0-4095](2000)                 : 2500
MulticastSendVCCType[0-2](1)             : 2
MulticastSendVCCAvgRate[0-370370]()      :
MulticastSendVCCPeakRate[0-370370]()     :
ConnectionCompeteTime[1-10](8)           : 6
MPSKeepAliveTime()                       :
MPSKeepAliveLifeTime()                   :
MPSInternetProtocols()                   :
MPSInitialRetryTime()                    :
MPSRetryTimeMaximum()                    :
MPSGiveupTime()                          :
MPSDefaultHoldingTime()                  :
MPCSetupFrameCount()                     :
MPCSetupFrameTime()                      :
MPCFlowProtocols()                       :
MPCRetryTime()                           :
MPCMaxRetryTime()                        :
switch_prompt #


switch_prompt # show lecstlvset

TlvsetNumber(ALL) : 3

TlvIndex  TlvDescription               Value
================================================================================
TLVSet 3 :
             1         Control Timeout              250
             2         Max Unknown Frame Count      4
             3         Max Unknown Frame Time       40
             4         VCC Timeout                  40000
             5         Max Retry Count              2
             6         Arp Aging Time               200
             7         Forward Delay                20
             8         ARP Response Time            20
             9         Flush Timeout                3
             10        Path Switching Delay         5
             11        Local Seg Id                 2500
             12        Multicast Send VCC Type      2
             15        Connection Complete Time     6
switch_prompt #
```

LECSVCC

Use LECSVCC to display VCCs queued to join the LECS. A LANE client sets the VCCs up as part of the LECS connection. You can display but not modify the VCCs (they are not modifiable). As soon as a client joins the LECS, the VCCs are no longer displayed.

Operators

show

Parameters

This attribute has no input parameters.

Output Parameter	Description
[VC Type]	Type of virtual connection.
[VPI/VCI]	VPI/VCI (virtual path/channel identifier) values of Control Direct VCC (virtual channel connection) or Multicast Send VCC.

Descriptions

Operator	Parameters/Permissions	Descriptions
show lecsvcc	[VC Type] <**vctype**> [VPI/VCI] <**vpi/vci**> All	Displays the active VCCs (SVCs and PVCs) on the LECS.

Examples

```
switch_prompt # show lecsvcc

VC Type                 VPI/VCI
========================================
PVC                     0/31
PVC                     0/33
SVC                     0/112
switch_prompt #
```

LES

Use LES to start and stop the BUS and LES for an ELAN.

Operators

`show, start, stop`

Parameters

This attribute has no parameters. Just enter **`start les`** or **`stop les`** at the switch prompt.

Descriptions

Operator	Parameters/Permissions	Description
`show les`	All	Shows LES and BUS status.
`start les`	Administrator	Starts the LES and BUS on the switch.
`stop les`	Administrator	Stops the LES and BUS on the switch.

Examples

```
switch_prompt # start les
NOTICE - 'ZLESSRV' ***** LES started *****

switch_prompt #

switch_prompt # stop les
          STOPPING  LES/BUS
Confirm(y/n)?:y
NOTICE - 'ZLESSRV' ***** LES shutdown *****

switch_prompt #

NOTICE - 'ZLESSRV' LES sendjoinresp:
LES Join :  39:00:00:00:00:00:00:00:20:D4:14:15:00:00:20:D4:14:15:00:00
NOTICE - 'ZLESSRV'
Bus Connect 39:00:00:00:00:00:00:00:20:D4:14:15:00:00:20:D4:14:15:00:00
switch_prompt #

switch_prompt # stop les
          STOPPING  LES/BUS
Confirm(y/n)?:y
NOTICE - 'ZLESSRV' ***** LES shutdown *****

switch_prompt # start les
NOTICE - 'ZLESSRV' ***** LES started *****
switch_prompt # NOTICE - 'ZLESSRV' LES sendjoinresp:
```

LESARP

Use LESARP to display the ARP server table for a specified ELAN. The ARP server table is maintained by the LES for the ELAN.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	Number of the ELAN served by the LES.	0-125	0

Output Parameter	Description
[LECId]	LEC identification number of the client.
[MACAddr/RouteDesc]	MAC (media access control) address/Route Descriptor of the client.
[ATM Address]	ATM address of the client.

Descriptions

Operator	Parameters/Permissions	Description
show lesarp	[ElanNumber] <**elannumber**> All	Displays the ARP table for the specified ELAN.

Example

```
switch_prompt # show lesarp
ELANNumber(0)     : 1

 ARP Table entries for ELAN  ELAN001
================================================================================
LECId            : 1
MACAddr/RouteDesc: 00:20:D4:14:22:80
ATM Address      : 39:00:00:00:00:00:00:00:20:D4:14:22:80:00:20:D4:14:22:80:00
switch_prompt #
```

LESClient

Use LESClient to manage the mapping between the LES and the LANE clients registered with it. Each LANE client is identified uniquely by its LEC ID.

Operators

`delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	Number of the ELAN served by the LES.	0-125	0
[LECId]	LEC ID of the client.	1-65279	0

Output Parameter	Description
[LECId]	LEC ID of the client.
[VPI/VCI]	VPI/VCI (virtual path/channel identifier) values of control direct VCC (virtual channel connection) or multicast send VCC.
[ATM address]	ATM address of the client.
[Flags]	Indicates whether the client is a Proxy or a Non-Proxy client.

Descriptions

Operator	Parameters/Permissions	Description
delete lesclient	[Elan Number] <**elannumber**> [LECId] <**lecidvalue**> Administrator	Removes a client from the specified ELAN.
show lesclient	**[Elan Number] <elannumber>** All	Displays information about all clients that have joined the specified ELAN.

Examples

```
switch_prompt # delete lesclient
ELANNumber (0):
LECId (0) : 12
Confirm? (y/n) : y
switch_prompt #

switch_prompt # show lesclient
ELANNumber (0):

 Client table entries for ELAN  ELAN000
================================================================================

 LECId           : 1
 VPI/VCI         : 0/215
 ATM Address     : 39:00:00:00:00:00:00:00:20:D4:14:2F:00:00:20:D4:14:2F:00:00
 Flags           : NONPROXY
switch_prompt #
```

LESELAN

Use LESELAN to manage characteristics of an LES for a specified ELAN. If a BUS corresponding to the LES exists, the characteristics of the LES should match those of the BUS.

Operators

`add, delete, modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	Number of the ELAN served by the LES.	0-125	0
[ELANName]	Name of the ELAN to which the LES belongs.	Up to 32 characters	
[ConnectMethod]	Type of connection used.	PVC, SVC	SVC
[ELANType]	The data-link type used by the ELAN.	802.3 (Ethernet) 802.5 (Token Ring)	802.3
[Multipoint]	Indicates whether control distribute VCC is PMP (point-to-multipoint) or PTP (point-to-point).	Yes: VCC is PMP No: VCC is PTP	Yes
[MTU]	Maximum transfer unit for the clients joining this ELAN.	1516, 1580, 4544, or 9234	1516
[ErrorLogEnable]	Whether or not the BUS and LES error logs are enabled.	Yes, No	No
[MinimumTDEnable]	Whether or not minimum acceptable traffic descriptor negotiation is enabled.	Yes, No	No
[ForwardPeakCellRate]	Minimum forward peak cell rate.	Positive integer	
[BackwardPeakCellRate]	Minimum backward peak cell rate.	Positive integer	

Input Parameter	Description	Value/Field Size	Default
[Distribute]	Establishes nature of control distribute VCC. Possibie values are: All or Proxy. All establishes control distribute VCC to all clients. Proxy establishes control distribute VCC only to Proxy clients.	All, Proxy	Proxy
[BUSATMAddress]	ATM address of the BUS (specify if the LES and BUS are not co-located).	13-20 byte hex-based/ Up to 59 characters	

Output Parameter	Description
[ATM Address]	ATM address of the LES on the ELAN.
[Distribute VPI/VCI]	VPI/VCI values of the control direct VCC or multicast send VCC.
[Distribute Method]	Indicates whether the control distribute VCC is established for all clients or for proxy clients only.
[ELAN Type]	Same as the [ELANType] input parameter.

Descriptions

Operator	Parameters/Permissions	Description
add leselan	[ELANNumber] <**elannumber**> [ELANName] <**elanname**> [ConnectMethod] <**connectmethod**> [ELANType] <**elantype**> [Multipoint] <**distributevcctype**> [MTU] <**maxframesize**> [Distribute] <**controldistributevccoption**> [BUSATMAddress] <**busatmaddress**> Administrator	Creates a specified ELAN on the LES. Each ELAN must have both an LES and a BUS assigned to it.

Operator	Parameters/Permissions	Description
delete leselan	[ELANNumber] <**elannumber**> Administrator	Removes a specified ELAN from the LES and drops all the clients connected to it.
modify leselan	[ELANNumber] <**elannumber**> [ELANName] <**elanname**> [ConnectMethod] <**connectmethod**> [ELANType] <**elantype**> [Multipoint] <**distributevcctype**> [MTU] <**maxframesize**> [Distribute] <**controldistributevccoption**> [BUSATMAddress] <**busatmaddress**> Administrator	Modifies parameters on the specified ELAN of the LES by deleting and then recreating the ELAN.
show leselan	[ELANNumber] <**elannumber**> All	Displays which ELANs are currently on the LES.

Examples

The following example creates ELAN 102 with default parameters for LES:

```
switch_prompt # add leselan
ELANNumber(0)                           : 102
ELANName(ELAN102)                       :
ConnectMethod(SVC)                      :
ELANType(802.3)                         :
Multipoint(YES)                         :
MTU(1516)                               :
Distribute(PROXY)                       :
BUSATMAddress(39:00:00:00:00:00:00:00:20:D4:14:15:00:00:20:D4:14:15:66:02):
switch_prompt #

switch_prompt # delete leselan
ELANNumber(0)  : 11
ELAN Number    : 11
ELAN Name      : ELAN011
ATM Address    : 39:00:00:00:00:00:00:11:22:33:44:55:66:00:20:D4:14:15:0B:02
Confirm(y/n)?  : y
switch_prompt #
```

The following example resets an ELAN with default parameters:

```
switch_prompt # modify leselan
ELANNumber(0)          : 102
ELANName(ELAN102)      :
ConnectMethod(svc)     :
ELANType(802.3)        :
Multipoint(yes)        :
MTU(1516)              : 9234
ErrorLogEnable(no)     :
MinimumTDEnable(no)    :
ForwardPeakCellRate()  :
BackwardPeakCellRate() :
Distribute(proxy)      :
BUSATMAddress(39:00:00:00:00:00:00:00:20:D4:14:15:00:00:20:D4:14:15:66:02):

switch_prompt #

switch_prompt # show leselan
ELANNumber(ALL)                         :102

   ELAN : ELAN102

ELAN Number           : 0
ELAN Name             : ELAN102
ATM Address           : 39:00:00:00:00:00:00:00:20:D4:14:15:00:00:20:D4:14:15:66:02
Max Frame Size        : 9234
Connection Method     : SVC
Distribute VPI/VCI    : 0/0
Distribute Method     : PROXY
ELAN Type             : 802.3
Multipoint            : YES
Error Logging         : NO
Min TD Negotiation    : NO
BUS Address           : 39:00:00:00:00:00:00:00:20:D4:14:15:00:00:20:D4:14:15:66:02
```

LESErrorLog

Use LESErrorLog to display or clear the LES error log associated with an ELAN.

Note Use the **`add leselan`** or **`modify leselan`** commands to enable or disable the LES error log for a specified ELAN.

Operators

`delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	The number of the ELAN whose LES errors are to be shown or deleted.	0-125	0

Output Parameter	Description
[ATM Address]	ATM address associated with the error.
[ErrorCode]	Decimal code that indicates why the error occurred (See Table 2-6).
[SysUpTime]	Time the error occurred with respect to switch up-time in hours, minutes, and seconds.

Descriptions

Operator	Parameters/Permissions	Description
delete leserrorlog	[ELANNumber] **<elannumber>** Administrator	Clears the LES error log.
show leserrorlog	Administrator	Displays the LES error log.

Table 2-6 LESErrorLog Error Codes

Code	Name	Meaning
0	Success	Successful Response
1	Version not supported	VERSION field of request contains a value higher than that supported.
2	Invalid request parameters	The parameters given are incompatible with the ELAN.
4	Duplicate LAN destination registration	SOURCE-LAN-DESTINATION duplicates a previously-registered LAN destination.
5	Duplicate ATM address	SOURCE-LAN-DESTINATION duplicates a previously-registered ATM address.
6	Insufficient resources to grant request	Responder is unable to grant request for reasons such as insufficient table space or ability to establish VCCs.
7	Access denied	Request denied for security reasons.
8	Invalid REQUESTOR-ID	LECID field is not zero (Configure or Join) or is not LE Client's LECID (others).
9	Invalid LAN destination	LAN destination is a multicast address; or, LAN destination is a route descriptor on an Ethernet/802.3 ELAN.
10	Invalid ATM address	Source or target ATM address is not in a recognizable format or is not valid.
20	No configuration	LE client is not recognized.
21	LE_CONFIGURE Error	Parameters supplied give conflicting answers. May also be used to refuse service without giving a specific reason.
22	Insufficient information	LE client has not provided sufficient information to allow the LECS to assign it to a specific ELAN.
24	TLV not found	There are no TLVs present in the set of TLVs for this emulated LAN that can be returned with the Config-Frag-Info TLV passed in the LE_CONFIGURE_REQUEST message.

Examples

```
switch prompt # show leserrorlog
ELANNumber(ALL)                      : 1

Error Log Entries for VLAN : 1

ATM Address                                ErrorCode    SysUpTime

39:1:2:3:4:5:6:7:8:9:0:1:2:3:4:5:6:7:8:9    22         01:02:03

switch prompt # clear leserrorlog
ELANNumber(ALL)                      : 1

 Clearing ALL  LES ELAN ErrorLog

Confirm(y/n)?:y

switch prompt #
```

LESLECStat

Use LESLECStat to display traffic characteristics for clients registered with an LES.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	Number of the ELAN to which the LES belongs.	0-125	0
[LECId]	LEC identification number of the specified client.	1-65279	

Output Parameter	Description
[ATMAddress]	ATM address of the LANE client.
[Receives]	Number of multicast, broadcast and unknown forward requests received by the BUS and the LES from this LEC.
[Forwards]	Number of ARP requests forwarded by the BUS and the LES from this LEC.
[Sends]	Number of requests or responses sent to this LEC by LES.

Descriptions

Operator	Parameters/Permissions	Description
show leslecstat	[ELANNumber] <**elannumber**> [LECId] <**lecid**> All	Displays statistical information about LANE clients on a specific ELAN. To verify the LEC ID, enter show client first to obtain the ELAN number.

Examples

```
switch_prompt # show leslecstat
ELANNumber(0)  :
LECId(0)       : 3

 Client 3 statistics for ELAN ELAN000

================================================================================
  ATM Address  : 39:00:00:00:00:00:00:00:20:D4:14:22:80:00:20:D4:14:22:80:00
  Receives     : 2
  Forwards     : 0
  Sends        : 0
switch_prompt #

switch_prompt # show leslecstat 3
LECId(0)       :

 Client statistics for ELAN ELAN003
================================================================================
LECId          : 1
ATM address    : 39:00:00:00:00:00:00:00:20:D4:14:22:80:00:20:D4:14:22:83:00
Receives       : 75
Forwards       : 0
Sends          : 0
LECId          : 2
ATM address    : 39:00:00:00:00:00:00:00:20:D4:14:22:80:00:20:D4:15:D4:83:00
Receives       : 10405
Forwards       : 10365
Sends          : 0
switch_prompt #
```

LESStat

Use LESStat to display or clear statistics of an LES for an ELAN.

Operators

`show, clear`

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	Number of ELAN to which the LES belongs.	0-125 or All	All

Output Parameter	Description
[Join OK]	Successful join responses sent out by the LES.
[Join version not supported errors]	Version not supported errors for join request.
[Reg. version not supported errors]	Version not supported errors for register request.
[Unreg. version not supported errors]	Version not supported errors for unregister request.
[Join invalid request param errors]	Version not supported errors for register request.
[Reg. invalid request param errors]	Invalid request parameters errors for register request.
[Unreg. invalid request param errors]	Invalid request parameters errors for unregister request.
[Join duplicate LAN destination errors]	Duplicate LAN destination join errors.
[Reg. duplicate LAN destination errors]	Duplicate LAN destination registration.
[Join duplicate ATM destination errors]	Duplicate ATM address errors for join request.
[Reg. duplicate ATM destination errors]	Duplicate ATM address errors for register request.
[Join insufficient resource errors]	Insufficient resources to grant errors for join request.

Output Parameter	Description
[Reg. insufficient resource errors]	Insufficient resources to grant errors for register request.
[Join access denied errors]	Access denied errors for join request.
[Reg. access denied errors]	Access denied errors for register request.
[Join invalid requestid errors]	Invalid LECID errors for join request.
[Reg. invalid requestid errors]	Invalid LECID errors for register request.
[Join invalid LAN destination errors]	Invalid LAN destination errors for join request.
[Reg. invalid LAN destination errors]	Invalid LAN destination errors for register request.
[Join invalid ATM address errors]	Invalid ATM address errors for join request.
[Reg. invalid ATM address errors]	Invalid ATM address errors for register request.

Descriptions

Operator	Parameters/Permissions	Description
show lesstat	[ELANNumber] <**elannumber**> All	Displays statistical information about the specified ELAN on the LES.
clear lesstat	[ELANNumber] <**elannumber**> Administrator	Clears statistical information about the specified ELAN on the LES.

Examples

```
switch_prompt # show lesstat
ELANNumber(ALL)                          :102

   ELAN : ELAN102 Statistics
  Join OK                                    : 0
  Join version not supported errors          : 0
  Reg. version not supported errors          : 0
  UnReg. version not supported errors        : 0
  Join invalid request param errors          : 0
  Reg. invalid request param errors          : 0
  UnReg. invalid request param errors        : 0
  Join duplicate LAN destination errors      : 0
  Reg. duplicate LAN destinations errors     : 0
  Join duplicate ATM address  errors         : 0
  Reg. duplicate ATM address errors          : 0
  Join insufficient resource errors          : 0
  Reg. insufficient resources errors         : 0
  Join access denied errors                  : 0
  Reg. access denied errors                  : 0
  Join invalid requestid errors              : 0
  Reg. invalid requestid errors              : 0
  Join invalid LAN destination errors        : 0
  Reg. invalid LAN destination  errors       : 0
  Join invalid ATM address errors            : 0
  Reg. invalid ATM address errors            : 0
switch_prompt #

switch_prompt # clear lesstat
ELANNumber(ALL)   :3
Clear LES ELAN 3 Statistics
Confirm(y/n)?: y
switch_prompt #
```

McastClients

Use McastClients to display clients associated with a multicast group.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	ELAN number associated with the multicast group.	0-125	0
[McastId]	ID of the multicast group.	2-64 or All	All

Output Parameter	Description
[LECId]	LEC ID of the client.
[ATM Address]	ATM address of the client.
[Selective MCAST Send VPI/VCI]	Selective multicast Send VCC information.

Descriptions

Operator	Parameters/Permissions	Description
show multicastclients	[ELANNumber] **<elannumber>** [McastId] **<mcastid>** Administrator	Displays clients associated with a multicast group.

Examples

```
switch_prompt # show mcastclients  0


MCASTID: 2, GROUP MACADDR : 01:80:C2:00:00:00
-----------------------------------------------

LECId                       : 2
ATM Address                 : 39:00:00:00:00:00:00:00:00:00:28:E8:80:00:00:1D:6B:6E:CC:01
Selective MCAST Send VPI/VCI : 0/108

LECId                       : 3
ATM Address                 : 39:00:00:00:00:00:00:00:00:00:28:E8:80:00:00:1D:5E:14:D4:01
Selective MCAST Send VPI/VCI : 0/128

switch_prompt #
```

MinMaxTableIndex

Use MinMaxTableIndex to display possible values for minimum and maximum cell threshold at switch ports. The table maps threshold values to index numbers. The index numbers are parameters of the **`modify porttrafficcongestion`** command. PortTrafficCongestion allows you to set values for minimum and maximum threshold (in number of cells) for a specified priority queue at a port. If the number of cells received by the switch on the specified priority queue exceeds the maximum threshold, the switch discards the cell.

Operators

`show`

Parameters

This attribute has no parameters. Just enter **`show minmaxtableindex`** at the switch prompt.

Descriptions

Operator	Parameters/Permissions	Description
`show minmaxtable`	Administrator	Displays the possible values for minimum and maximum cell threshold at switch ports.

Examples

```
switch_prompt # show minmaxtableindex
----------------------------------------
MinIndex  MinValue  MaxIndex  MaxValue
----------------------------------------
0         65536     0         1048576
1         32768     1         786432
2         16384     2         524288
3         8192      3         393216
4         4096      4         262144
5         2048      5         196608
6         1024      6         131072
7         512       7         98304
8         256       8         65536
9         128       9         49152
10        64        10        32768
11        32        11        16384
12        16        12        8192
13        8         13        4096
14        4         14        2048
15        0         15        1024
```

MyNMAddr

Use MyNMAddr to manage the switch through the specified IP address.

Operators

`modify, show`

Parameters

Parameter	Description	Value/Field Size	Default
[IPAddr]	IP address of the switch.	Dot decimal/ 15 characters	Registered IP address

Descriptions

Operator	Parameters/Permissions	Description
`modify mynmaddr`	`[IPAddress] <`**`ipaddress`**`>` Administrator	Sets the IP address through which the switch can be managed by the SNMP manager. The switch comes with a default MyNMAddr that matches its Ethernet address. However, MyNMAddr can be changed to an IP address that corresponds to a LANE or IP/ATM (IP over ATM) client on the switch. This allows the switch to be managed through an ATM interface.
`show mynmaddr`	`[IPAddress] <`**`ipaddress`**`>` Administrator	Displays the current IP address through which the switch can be managed.

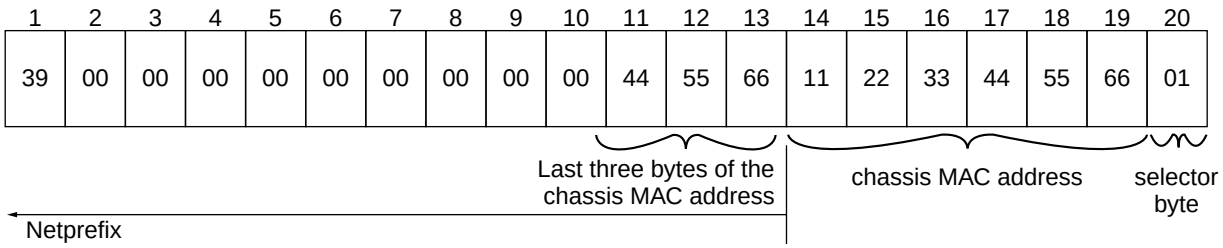
Examples

```
switch_prompt # modify mynmaddr
IpAddr()         : 204.95.75.186
My Nm IP-Address : 204.95.75.186
switch_prompt #

switch_prompt # show mynmaddr
My Nm IP-Address : 204.95.75.186
switch_prompt #
```

NetPrefix

Use NetPrefix to set or display network ATM address prefixes on a particular port. The 13-byte net prefix is based on a hierarchical addressing scheme. The default value starts with the first byte set to 39 (DCC address format), followed by nine pairs of 00s. The net prefix value typically is supplied by the network side of the UNI (user network interface). See the ATM address structure diagram following.


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
39 00 00 00 00 00 00 00 00 00 44 55 66 11 22 33 44 55 66 01
Last three bytes of the chassis MAC address
chassis MAC address
selector byte
Netprefix

Note You can hot-swap TSMs. Hot-swapping is replacing a module when the chassis is powered up. If you replace a TSM with another TSM of the same type (same I/O ports), existing configuration of port parameters is not affected. This includes parameters set using any of the following attributes: ATMRoute, CACServiceClassBw, IlmiConfig, NetPrefix, Port, PortConfig, PVC, PVP, ServiceRegistry, SigTimer, SigStatistics, SSCOPConfig, and SSCOPStatistics. If you replace a TSM with another TSM of a different type, existing configuration of port parameters is deleted. The deletion occurs when the new module is plugged into the chassis backplane.

Operators

`add, delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), or All	All
[NetPrefix]	Net prefix within the ATM address.		No default

Note If you hot-swap a TSM with a TSM of a different type (different I/O ports), net prefix information associated with ports on the original TSM is deleted. Before you insert a replacement TSM, you can display existing net prefix information using the **show** operator with the **/o** option (for example: **show netprefix /o**).

Output Parameter	Description
[Port #]	Port number on the switch. (Same as the [PortNumber] input parameter.)
[NetPrefix]	Net prefix within the ATM address.

Descriptions

Operator	Parameters/Permissions	Description
add netprefix	[PortNumber] <**portnumber**> [NetPrefix] <**netprefix**> Administrator	Adds a net prefix for a particular port. Only one net prefix can be assigned per port. When a net prefix for a port is modified, all routes under the old net prefix are flushed and all SVC connections, QSAAL, and ILMI links are released. You must reboot for this command to take effect.
delete netprefix	[PortNumber] <**portnumber**> [NetPrefix] <**netprefix**> Administrator	Deletes a net prefix for a particular port.
show netprefix	[PortNumber] <**portnumber**> Administrator	Displays net prefixes for a specified port or for all ports.

Examples

```
switch_prompt # show netprefix
PortNumber :( ALL ):

    Port#                NetPrefix
=============================================================
     1A2           39:00:00:00:00:00:00:00:00:00:20:D4:14:16:00

switch_prompt #

switch_prompt # add netprefix
PortNumber(ALL) : 1a1
NetPrefix()     : 39:00:00:00:00:00:00:00:00:00:20:D4:14:15:00

switch_prompt #

switch_prompt # show netprefix
PortNumber :( ALL ):

    Port#                NetPrefix
=============================================================
     1A1           39:00:00:00:00:00:00:00:00:00:20:D4:14:15:00
     1A2           39:00:00:00:00:00:00:00:00:00:20:D4:14:16:00

switch_prompt #

switch_prompt # delete netprefix
PortNumber(ALL) : 1a2
NetPrefix()     : 39:00:00:00:00:00:00:00:00:00:20:D4:14:16:00

switch_prompt #
```

NetworkClock

Use NetworkClock to set or display the port used as the network clock source.

Operators

`modify, show`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Physical port number on the switch.	1A1 to 8B4, CPU or CPU.1	CPU

Descriptions

Operator	Parameters/Permissions	Description
`modify networkclock`	`[PortNumber]` **`<portnumber>`** Administrator	Sets the port used as the network clock source.
`show networkclock`	Administrator	Displays the port used as the network clock source.

Examples

```
switch_prompt # set networkclock
PortNumber(CPU)                          :

switch_prompt #

switch_prompt # show networkclock

Network clock sourced on port CPU

switch_prompt #
```

Passwd

Use Passwd to change the password of the current or lower-privileged user.

Operators

passwd

Parameters

Input Parameter	Description	Value/Field Size	Default
[Old Password]	Your current password.	0-8 characters (0 is no password)	No default
[New Password]	Your new password.	0-8 characters (0 is no password)	No default

Descriptions

Operator	Parameters/Permissions	Description
passwd	[Old Password] <**oldpasswd**> [New Password] <**newpasswd**> [Reenter Password] <**newpasswd**> All	Changes the password of the current or lower-privileged user.

Examples

```
switch_prompt # passwd
Old Password: admin
Changing Password for User Administrator
New Password: levelone
Reenter Password: levelone
Password Changed Successfully
switch_prompt #
```

Ping

Use Ping to test IP connectivity of a client.

Note The client must be on the same subnet or it must be reachable by routing from the subnet that is pinging.

Operators

`start`

Parameters

Input Parameter	Description	Value/Field Size	Default
[DestIP]	IP address for ping packets.	5-8 characters	Registered IP address
[Count]	Number of times you want to send ping packets.	1-100	1

Descriptions

Operator	Parameters/Permissions	Description
`start ping`	`[DestIP] <`**`destinationipaddress`**`>` `[Count] <`**`numberoftries`**`>` Administrator	Starts the pinging of the external destination you are trying to reach.

Examples

```
switch_prompt # start ping
DestIP() : 204.95.77.254
Count(1) : 1
204.95.77.254 is alive
switch_prompt #
```

PnniInterface

Use PnniInterface to set or display characteristics to configure a switch port for PNNI routing.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch. You can specify a physical or virtual port.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), or All	All
[AdmnWtCbr]	Administrative weight for the constant bit rate (CBR) service category.	Positive integer	5040
[AdminWtRtVbr]	Administrative weight for the realtime variable bit rate (RTVBR) service category.	Positive integer	5040
[AdminWtNrtVbr]	Administrative weight for the non-realtime variable bit rate (NRTVBR) service category.	Positive integer	5040
[AdminWtAbr]	Administrative weight for the available bit rate (ABR) service category.	Positive integer	5040
[AdminWtUbr]	Administrative weight for the unspecified bit rate (UBR) service category.	Positive integer	5040
[AggregationToken]	Derived aggregation token for links associated with the port. The aggregation token used to determine which links to a given neighbor node are to be aggregated and advertised as a single logical link.	Positive integer	0
[RccServCategory]	Service category used for the PNNI routing control channel (VCI=18) on this interface.	CBR, RTVBR, NRTVBR, ABR, UBR	NRTVBR

Output Parameter	Description
[Port Number]	Port number on the switch.
[AdmnWt CBR]	Administrative weight for the constant bit rate (CBR) service category.
[AdmnWt RTVBR]	Administrative weight for the realtime variable bit rate (RTVBR) category.
[AdmnWt NRTVBR]	Administrative weight for the non-realtime variable bit rate (NRTVBR) service category.
[AdmnWt ABR]	Administrative weight for the available bit rate (ABR) service category.
[AdmnWt UBR]	Administrative weight for the unspecified bit rate (UBR) service category.
[Aggregation Token]	Derived aggregation token for links associated with the port.

If you give a specific [PortNumber], the **`show pnniinterface`** command displays the following additional fields.

[Port Id]	Identifier of the port with respect to PNNI routing.
[VP Capability]	Whether or not VPCs can be established over links associated with the interface.
[Rcc Service Category]	Service category of routing control channel on this interface. Possible values are: CBR, RTVBR, NRTVBR, ABR, and UBR.
[Rcc Traffic Descr Index]	Traffic descriptor index of the routing control channel.

Descriptions

Operator	Parameters / Permissions	Description
`modify pnniinterface`	`[PortNumber]` **`<portnum>`** `[AdminWtCbr]` **`<admnwtcbr>`** `[AdminWtRtVbr]`**`<admnwtrtvbr>`** `[AdminWtNrtVbr]` **`<admnwtnrtvbr>`** `[AdminWtABR]` **`<admnwtabr>`** `[AdminWtUBR]` **`<adminwtubr>`** `[AggregationToken]` **`<aggregationtoken>`** `[RccServCategory]` **`<rccservcategory>`** Administrator	Sets parameters for PNNI routing.
`show pnniinterface`	Administrator	Displays parameters for PNNI routing.

Examples

```
switch_prompt # modify pnniinterface
PortNumber()                            : 1a1
AdmnWtCbr(100)                          :
AdmnWtRtVbr(100)                        :
AdmnWtNrtVbr(100)                       :
AdmnWtAbr(100)                          :
AdmnWtUbr(100)                          :
AggregationToken(0)                     :
RccServCategory(NRTVBR)                 :

switch_prompt #

switch_port # show pnniinterface
PortNumber(ALL)                         :

Port     AdmnWt      AdmnWt      AdmnWt      AdmnWt      AdmnWt    Aggregation
Number    CBR        RTVBR       NRTVBR       ABR         UBR        Token
================================================================================
1A1      5040        5040        5040        5040        5040          0
1A2      5040        5040        5040        5040        5040          0
1A3      5040        5040        5040        5040        5040          0

switch_prompt #

switch_prompt # show pnniinterface
PortNumber(ALL)                         : 1a2

PNNI Interface Port 1A2
================================================================================
Port Number             : 1A2
Node Index              : 1
Port Id                 : 65526
Aggr Token              : 0
VP Capability           : No
Admin Weight CBR        : 5040
Admin Weight RT_VBR     : 5040
Admin Weight NRT_VBR    : 5040
Admin Weight UBR        : 5040
Admin Weight ABR        : 5040
Rcc Service Category    : NRTVBR
Rcc Traffic Descr Index : 0

switch_prompt #
```

PnniLink

Use PnniLink to display characteristics of all PNNI links connected directly to the switch. The characteristics include operation of each link and the relationship between each link and the nodes it connects.

Note Use PnniNetworkLink to display links not connected directly to the switch but known to the switch through the exchange of database information.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[Num]	Index number of the link as assigned by the console. Use the **`show pnnilink all`** command to get a list of index numbers.	Positive integer or All	All

Output Parameter	Description
[Num]	Index of the link as assigned by the console.
[Port Number]	Physical or virtual port number on the switch.
[Node Index]	Index number of a logical node on the switch.
[Remote Node IP Addr]	IP address of remote node (node on other end of link).
[Hello State]	For horizontal and outside links between lowest-level nodes and for links of unknown type, this parameter indicates the state of the Hello protocol exchange over this link. Possible values are: Down, Attempt, 1WayInside, 2WayInside, 1WayOutside, 2WayOutside, and CommonOutside.
[Link Type]	Type of link. Possible values are: Unknown, Uplink, and Lowest Level Horizontal Link, and Horizontal Link to/from LGN.

Output Parameter	Description
If you give a specific [Num], the **show pnnilink** command displays the following additional fields.	
[Pnni Version]	For lowest-level horizontal and unknown link types, this attribute indicates the version of PNNI routing protocol used to exchange information. If communication with the neighbor node has not yet been established, then the PnniVersion is set to Unknown.
[Port ID]	Identifier of the port associated with the link with respect to PNNI routing.
[Remote Node Id]	Identifier of the remote node.
[Remote Port Id]	Identifier of the port associated with the link by the remote node.
[Derived Aggr. Token]	Derived aggregation token of the link.
[Upnode Id]	Identifier of the node at the other end of an uplink.
[Upnode ATM Addr]	ATM address of the upnode.
[Common Peer Group Id]	Peer group ID shared by the local node (on switch) and upnode.
[SVCC RCC Index]	Index of switched virtual channel connection of routing control channel on link.
[Rcv Hellos]	Number of Hello packets received over the link.
[Xmits Hellos]	Number of Hello packets transmitted over the link.

Description

Operator	Parameters / Permissions	Description
show pnnilink	[Num] **<num>** Administrator	Displays attributes of all PNNI links from the switch. You might have configured multiple logical nodes on the switch, each associated with a different set of links.

Examples

```
switch_prompt # show pnnilink
Num(ALL)                                  :

Num  Port     Node   Remote Node     Hello State    Link Type
     Number   Index  IP Addr
================================================================================
1    7A3          1  206.61.237.19   2WayInside     Lowest Level Horizontal Link
2    7B1          1  206.61.237.15   CommonOut      Outside and Uplink
3    7B2          1  206.61.237.15   CommonOut      Outside and Uplink
4    --           2  N/A             2WayInside     Horizontal Link to/from LGN

switch_prompt # show pnnilink
Num(ALL)                                  : 1

PNNI Link Num 1
================================================================================
Node Index          : 1
Port Number         : 7A3
Port Id             : 29634560
Link Type           : Lowest Level Horizontal Link
PNNI Version        : 1.0
Hello State         : 2WayInside
Remote Node IP Addr : 206.61.237.19
Remote Node Id      : 50:a0:39:00:00:00:00:00:00:00:00:28:8d:00:00:20:d4:28:8d:7f:00
Remote Port Id      : 8192
Derived Aggr. Token : 0
Upnode Id           : NULL
Upnode ATM Addr     : NULL
Common Peer Group Id: NULL
SVCC RCC Index      : 0
Rcv Hellos          : 15953
Xmt Hellos          : 15980
```

PnniMetrics

Use PnniMetrics to manage PNNI metrics that apply to a logical node on the switch.

Operators

`add, delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[MetricsTag]	Number associated with a group of traffic parameters.	Positive integer or All	All
[TrafficDirection]	Direction in which the parameters apply.	Incoming, Outgoing	Outgoing
[ServiceCategory]	Service categories to which the parameters apply.	CBR, RTVBR, NRTVBR, ABR, UBR	UBR
[GCAC_CLP]	Whether advertised GCAC parameters apply for CLP=0 traffic or for CLP=0+1 traffic.	CLP=0 (1), CLP=0+1 (2)	2
[AdminWt]	Administrative weight for the specified service categories from the switch to the remote end of the PNNI link. The higher the value, the less desirable the path.		5040
[MaxCellRate]	Maximum cell rate (in cells per second) for the specified service category.		
[AvailableCellRate]	Available cell rate (in cells per second) for the specified service category.		
[MaximumCellTransferDelay]	Maximum cell transfer delay (in microseconds) for the specified service category.		
[CellDelayVariation]	Cell delay variation (in microseconds) for the specified service category.		

Input Parameter	Description	Value/Field Size	Default
[CellLossRateForClp=0]	Cell loss ratio for CLP=0 traffic for the specified service category. The cell loss ratio is computed as $10^{(-n)}$, where n is the value of this parameter.		
[CellLossRateForCLP=0+1]	Cell loss ratio for CLP=0+1 traffic for the specified service category. The cell loss ratio is computed as $10^{(-n)}$ where n is the value here.		
[CellRateMargin]	Cell rate margin (in cells per second) for the specified service category.		
[VarianceFactor]	Variance factor in units of $2^{(-8)}$ for the specified service category.		

Output Parameter	Description
[Metrics Tag]	Number associated with a group of traffic parameters.
[Direction]	Direction in which the parameters apply. (Same as [TrafficDirection] input parameter).
[Metrics Index]	An index into the set of parameters associated with the given tag and direction.
[GCAC CLP]	Indicates whether advertised GCAC parameters apply for CLP=0 traffic or for CLP=0+1 traffic.
[Admin Wt]	Administrative weight for the specified service categories from the switch to the remote end of the PNNI link.
[Service Categories]	Service category to which the parameters apply.

If you give a specific [MetricsTag], the **`show pnnimetrics`** command displays the following additional fields.

[Maximum Cell Rate]	Maximum cell rate (in cells per second) for the specified service category.
[Available Cell Rate]	Available cell rate (in cells per second) for the specified service category.

Output Parameter	Description
[Maximum Cell Transfer Delay]	Maximum cell transfer delay (in microseconds) for the specified service category.
[Cell Delay Variation]	Cell delay variation (in microseconds) for the specified service category.
[Cell Loss Rate CLP0]	Cell loss ratio for CLP=0 traffic for the specified service category. The cell loss ratio is computed as $10^{(-n)}$, where n is the value of this parameter.
[Cell Loss Rate CLP0+1]	Cell loss ratio for CLP=0+1 traffic for the specified service category. The cell loss ratio is computed as $10^{(-n)}$, where n is the value of this parameter.
[Cell Rate Margin]	Cell rate margin (in cells per second) for the specified service category.
[Variance Factor]	Variance factor in units of $2^{(-8)}$ for the specified service category.

Descriptions

Operator	Parameters / Permissions	Description
add pnnimetrics	[MetricsTag] **<metricstag>** [TrafficDirection] **<trafficdirection>** [ServiceCategory] **<servicecategory>** [GCAC_CLP] **<gcac_clp>** [AdminWt] **<adminweight>** [MaxCellRate] **<maxcellrate>** [AvailableCellRate] **<availablecellrate>** [MaximumCellTransferDelay] **<maximumcelltransferdelay>** [CellDelayVariation] **<celldelayvariation>** [CellLossRateCLP0] **<celllossrateclp0>** [CellLossRateCLP0+1] **<celllossrateclp0+1>** [CellRateMargin] **<cellratemargin>** [VarianceFactor] **<variancefactor>** Administrator	Creates a PNNI metric.
delete pnnimetrics	[MetricsTag] **<metricstag>** [TrafficDirection] **<trafficdirection>** [MetricsIndex] **<index>** Administrator	Deletes a PNNI metric.
show pnnimetrics	Administrator	Displays PNNI metrics.

Examples

```
switch_prompt # show pnnimetrics
MetricsTag(ALL)                          :

Metrics Tag Direction Metrics Index GCAC CLP  Admin Wt  Service Categories
================================================================================
          3  Outgoing            2   CLP0+1        5040  ABR
    1118484  Outgoing            1   CLP0+1        5040  UBR
    1118484  Outgoing            2   CLP0+1        5040  ABR
    1118484  Outgoing            4   CLP0          5040  NRTVBR
    1118484  Outgoing           24   CLP0          5040  CBR RTVBR
    1118485  Outgoing            1   CLP0+1        5040  UBR
    1118485  Outgoing            2   CLP0+1        5040  ABR
    1118485  Outgoing            4   CLP0          5040  NRTVBR
    1118485  Outgoing           24   CLP0          5040  CBR RTVBR
    1118494  Outgoing            1   CLP0+1        5040  UBR
    1118494  Outgoing            2   CLP0+1        5040  ABR
    1118494  Outgoing            4   CLP0          5040  NRTVBR
```

```
switch_prompt # add pnnimetrics
MetricsTag(1)                           : 4
TrafficDirection(Outgoing)              :
ServiceCategory(UBR)                    :
GCAC_CLP(2)                             :
AdminWt(5040)                           :
MaxCellRate(-1)                         :
AvailableCellRate(-1)                   :
MaximumCellTransferDelay(-1)            :
CellDelayVariation(-1)                  :
CellLossRatioForCLP=0(-1)               :
CellLossRatioForCLP=0+1(-1)             :
CellRateMargin(-1)                      :
VarianceFactor(-1)                      :

switch_prompt #

switch_1 # show pnnimetrics
MetricsTag(ALL)                         : 3

================================================================================
Metrics Tag             : 3
Direction               : Outgoing
Metrics Index           : 2
Service Categories      : ABR
GCAC CLP                : CLP0+1
Admin Wt                : 5040
Maximum Cell Rate       : 3 (cells/second)
Available Cell Rate     : 3 (cells/second)
Max Cell Transfer Delay : Not used
Cell Delay Variation    : Not used
Cell Loss Ratio CLP0    : Not used
Cell Loss Ratio CLP0+1  : Not used
Cell Rate Margin        : Not used
Variance Factor         : Not used

switch_prompt #

switch_prompt # delete pnnimetrics
MetricsTag(1)                           : 3
TrafficDirection(Outgoing)              :
MetricsIndex(1)                         : 2

================================================================================
=
Metrics Tag             : 3
Direction               : Outgoing
Metrics Index           : 2
Service Categories      : ABR
GCAC CLP                : CLP0+1
Admin Wt                : 5040
Maximum Cell Rate       : 3 (cells/second)
Available Cell Rate     : 3 (cells/second)
Max Cell Transfer Delay : Not used
Cell Delay Variation    : Not used
Cell Loss Ratio CLP0    : Not used
Cell Loss Ratio CLP0+1  : Not used
Cell Rate Margin        : Not used
Variance Factor         : Not used
The metrics was deleted successfully.

switch_prompt #
```

PnniNeighbor

Use PnniNeighbor to display PNNI neighbors of any logical node on the switch. The PNNI neighbors are themselves logical nodes on other switches. Each PNNI neighbor is linked directly to one of the local logical nodes. (The logical nodes on the switch are viewed as local logical nodes.) PnniNeighbor displays node ID and database exchange information for the neighbor nodes.

Operators

`show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[Num]	Index number of the neighbor as assigned by the console. Use the **`show pnnineighbor all`** command to get a list of index numbers.	Positive integer or All	All

Output Parameter	Description
[Num]	Index number of the neighbor as assigned by the console.
[Neighbor Node IP Addr.]	IP address of the neighbor node.
[Neighbor Node ID]	Identifier of the neighbor node.
[State]	PNNI database exchange state between the local and neighbor node. Possible values are: Down, Negotiation, Exchange, Loading, and Full.
If you give a specific [Num], the **`show pnnineighbor`** command displays the following additional fields.	
[Node Index]	Index number of a logical node on the switch.
[Remote Node Id]	Same as the [Neighbor Node ID] input parameter.
[Remote Node IP Addr]	IP address of the remote node.
[Svcc Rcc Index]	Index of switched virtual channel connection of the routing control channel on the link between the local and remote (neighbor) nodes.

Output Parameter	Description
[Rcv DB Sums]	Number of database summary packets received from the neighbor node.
[Xmt DB Sums]	Number of database summary packets sent to the neighbor node.
[Rcv Ptsps]	Number of PTSPs received from the neighbor node.
[Xmt Ptsps]	Number of PTSPs (re)transmitted to the neighbor node.
[Rcv Ptse Reqs]	Number of PTSE request packets received from the neighbor node.
[Xmt Ptse Reqs]	Number of PTSE request packets transmitted to the neighbor node.
[Rcv Ptse Acks]	Number of PTSE acknowledge packets received from the neighbor node.
[Xmt Ptse Acks]	Number of PTSE Ack packets received from the neighbor node.
[Port Count]	Number of ports that connect to the neighbor node.
[Port Number]	Number identifying a port connected to the neighbor node.
[Used For Flooding]	Whether or not the port is being used for transmission of flooding and database synchronization information to the neighbor node.

Descriptions

Operator	Parameters / Permissions	Description
show pnnineighbor	[Num] **<num>** Administrator	Displays the PNNI neighbor(s) of the switch. You might have configured multiple logical nodes on the switch, each having a different set of neighbors.

Examples

```
switch_prompt # show pnnineighbor
Num(ALL)                                  :

Num Neighbor Node                Neighbor Node Id                                  State
    IP Addr.
=============================================================================================
1   206.61.237.213  60:a0:39:00:00:00:00:00:00:00:00:14:c0:80:00:20:d4:14:c0:ff:00 F

switch_prompt # show pnnineighbor
Num(ALL)                                  : 1

Neighbor Num 1
=============================================================================
Node Index          : 1
Remote Node Id      : 60:a0:39:00:00:00:00:00:00:00:00:14:c0:80:00:20:d4:14:c0:ff:00
Remote Node IP Addr : 206.61.237.213
State               : Full
Svcc Rcc Index      : 0
Rcv DB Sums         : 2
Xmt DB Sums         : 3
Rcv Ptsps           : 7
Xmt Ptsps           : 5
Rcv Ptse Reqs       : 1
Xmt Ptse Reqs       : 1
Rcv Ptse Acks       : 1
Xmt Ptse Acks       : 4
Port Count          : 1

More(<space>/q)?:

Ports connected the neighbor:

Port Number     Used for Flooding
================================
1A4                    Yes

switch_prompt #
```

PnniNetworkLink

Use PnniNetworkLink to display characteristics of the PNNI hierarchy as seen from a logical node on the switch. The characteristics include the operation of all links and nodes known to the logical node through the exchange of database information. The logical node on the switch is viewed as the local node.

Note Use PnniLink to display links connected directly to the switch.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[Num]	Index number of the link as assigned by the console. Use the **show pnninetworklink all** command to get a list of index numbers.	Positive integer or All	All

Output Parameter	Description
[Num]	Index number of the link as assigned by the console.
[Originating Node Id]	Identifier of the node whose connectivity within itself or to other nodes is displayed. This node is the origin of connectivity information that is now in the database of the local node.
[Orig Port Id]	Identifier of the port assigned to the link by the originating node.
[Remote Node Id]	Identifier of the node at the other end of the link from the originating node.
[Remote Port Id]	Identifier of the port assigned to the link by the remote node.

Output Parameter	Description
If you give a specific [Num], the **show pnninetworklink** command displays the following additional fields.	
[Index]	An index into the set of link and nodal connectivity associated with the originating node and port. This index is needed since there may be multiple entries for nodal connectivity from a specific node and port pair.
[Link Type]	The type of PNNI entity associated with this link. Possible values are: Horizontal Link to/from LGN, Lowest Level Horizontal Link, Uplink, and Unknown.
[Peer Group Id]	Peer group of the originating node.
[Aggr Token]	Derived aggregation token value for this link.
[Vp Capability]	Whether or not VPCs can be established across the PNNI entity associated with this link.
[Ptse Id]	Identifier of the PTSE from the originating node. The PTSE contained information groups(s) that are now part of the database for the local node.
[Metrics Tag]	Integer that associates a set of traffic parameters with this link.

Descriptions

Operator	Parameters / Permissions	Description
show pnninetworklink	[Num] <**num**> Administrator	Displays information on the link(s) within the PNNI hierarchy as seen from the local logical node.

Examples

```
switch_prompt # show pnninetworklink
Num(ALL)                                :

     Originating Node Id                                          Orig Port Id
Num  Remote Node Id                                             Remote Port Id
================================================================================
1   48:50:39:00:00:00:00:00:00:00:00:00:00:00:20:d4:14:41:ff:00 2147483649
    48:50:39:00:00:00:00:00:00:00:00:00:01:00:20:d4:29:05:7f:00 2147483648

2   48:50:39:00:00:00:00:00:00:00:00:00:01:00:20:d4:29:05:7f:00 2147483648
    48:50:39:00:00:00:00:00:00:00:00:00:00:00:20:d4:14:41:ff:00 2147483649

3   50:a0:39:00:00:00:00:00:00:00:00:14:41:80:00:20:d4:14:41:ff:00       4096
    50:a0:39:00:00:00:00:00:00:00:00:14:59:00:00:20:d4:14:59:7f:00      45056

4   50:a0:39:00:00:00:00:00:00:00:00:14:59:00:00:20:d4:14:59:7f:00      16384
    50:a0:39:00:00:00:00:00:00:00:00:28:c1:80:00:20:d4:28:c1:ff:00      57344

5   50:a0:39:00:00:00:00:00:00:00:00:14:59:00:00:20:d4:14:59:7f:00      45056
    50:a0:39:00:00:00:00:00:00:00:00:14:41:80:00:20:d4:14:41:ff:00       4096

switch_prompt #

switch_prompt # show pnninetworklink
Num(ALL)                                : 4

PNNI Link Num 4
================================================================================
Node Index    : 1
Orig Node Id  : 50:a0:39:00:00:00:00:00:00:00:00:14:59:00:00:20:d4:14:59:7f:0
0
Orig Port Id  : 16384
Index         : 1
Link Type     : Horizontal Link
Peer Group Id : 50:39:00:00:00:00:00:00:00:00:00:00:00:00
Aggr Token    : 0
Remote Node Id: 50:a0:39:00:00:00:00:00:00:00:00:28:c1:80:00:20:d4:28:c1:ff:0
0
Remote Port Id: 57344
Vp Capability : False
Ptse Id       : 9
Metrics Tag   : 1118495

switch_prompt #
```

PnniNetworkNode

Use PnniNetworkNode to display all nodes within the PNNI hierarchy as seen from a logical node on the switch. The logical node on the switch is viewed as the local node. The other nodes are viewed as remote nodes.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[Num]	Index number of the remote node as assigned by the console. Use the **show pnninetworknode all** command to get a list of index numbers.	Positive integer or All	All

Output Parameter	Description
[Node Id]	Identifier of the remote node.
If you give a specific [Num}, the **show pnninetworknode** command displays the following additional fields.	
[Node Index]	An index into the set of nodal information associated with the remote node. This index is needed since there may be multiple entries for nodal information from a specific node.
[Peer Group Id]	Identifier of the peer group of the remote node.
[Node ATM Address]	ATM end system address of the remote node.
[Rest. Transit]	Whether or not the remote node is restricted to only allow support of SVCs originating or terminating at its location. Possible values are: True and False. True indicates that the transit capabilities are restricted; that is, transit connections are not allowed. False indicates that transit connections are allowed. This parameter reflects the setting of the restricted transit bit received in the nodal information PTSE of the originating node.

Output Parameter	Description
[Complex Rep.]	Whether or not the remote node uses the complex node representation. Possible values are: True and False. True indicates the spokes and bypasses that make up the complex node representation should be found in the pnniMapTable. This parameter reflects the setting of the nodal representation bit received in the nodal information PTSE of the remote node.
[Rest. Branching]	Whether the remote node is able to support additional branches. Possible values are: True and False. False indicates it can support additional branches. This parameter reflects the setting of the restricted branching bit received in the nodal information PTSE of the remote node.
[DB Overload]	Whether the remote node is currently operating in topology database overload state. Possible values are: True and False. This parameter has the same value as the Non-transit for PGL Election bit in the nodal information group originated by this node.
[Leader]	Whether the remote node claims to be Peer Group Leader of its peer group. Possible values are: True and False. This parameter reflects the setting of the I Am Leader bit received in the nodal information PTSE of the remote node.
[Leader Priority]	Leadership priority value advertised by the remote node.
[Preferred PGL]	When the remote node is a Peer Group Leader, this indicates the node ID of the parent LGN. If the remote node is not leader of its peer group, this parameter is set to NULL.
[Parent Node Id]	When the remote node is a Peer Group Leader, this indicates the node ID of the parent LGN. If the remote node is not leader of its peer group, this parameter is set to NULL.
[Parent ATM Addr]	When the remote node is a Peer Group Leader, this indicates the ATM address of the parent LGN. If the remote node is not leader of its peer group, this parameter is set to NULL.
[Parent PG Id]	When the remote node is a Peer Group Leader, this indicates the node's parent peer group ID. If the remote node is not leader of its peer group, this parameter is set to NULL.
[Parent PGL Id]	When the remote node is a Peer Group Leader, this indicates the Peer Group Leader of the parent peer group of the node. If the remote node is not leader of its peer group, this parameter is set to NULL.

Descriptions

Operator	Parameters / Permissions	Description
show pnninetworknode	[Num] **<num>** Administrator	Displays nodes within the PNNI hierarchy.

Examples

```
switch_prompt # show pnninetworknode
Num(ALL)                                  :

Num      Node Id
================================================================================
1        48:50:39:00:00:00:00:00:00:00:00:00:00:00:20:d4:14:41:ff:00
2        48:50:39:00:00:00:00:00:00:00:00:00:01:00:20:d4:29:05:7f:00
3        50:a0:39:00:00:00:00:00:00:00:00:14:41:80:00:20:d4:14:41:ff:00
4        50:a0:39:00:00:00:00:00:00:00:00:14:59:00:00:20:d4:14:59:7f:00
5        50:a0:39:00:00:00:00:00:00:00:00:28:c1:80:00:20:d4:28:c1:ff:00
6        50:a0:39:00:00:00:00:00:00:00:00:28:e6:00:00:20:d4:28:e6:7f:00

switch_prompt #

switch_prompt # show pnninetworknode
Num(ALL)                                  : 4

Node Num 4
================================================================================
Node Index     : 1
Node Id        : 50:a0:39:00:00:00:00:00:00:00:00:14:59:00:00:20:d4:14:59:7f:00
Peer Group Id  : 50:39:00:00:00:00:00:00:00:00:00:00:00
Node ATM Addr  : 39:00:00:00:00:00:00:00:00:00:14:59:00:00:20:d4:14:59:7f:00
Rest. Transit  : False
Complex Rep.   : False
Rest. Branching: False
DB Overload    : False
Leader         : False
Leader Priority: 0
Preferred PGL  : 50:a0:39:00:00:00:00:00:00:00:00:14:41:80:00:20:d4:14:41:ff:00
Parent Node Id : Null
Parent ATM Addr: Null
Parent PG Id   : Null
Parent PGL Id  : Null

switch_prompt #
```

PnniNode

Use PnniNode to set or display logical nodes on the switch. If the switch is represented on multiple levels of the PNNI hierarchy, it has a separate logical node (and node ID) for each representation.

Operators

`add, delete, modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[NodeIndex]	Identifier for a logical node on the switch.	Positive integer	1
[NodeLevel]	A bit-string length that indicates PNNI routing level. The higher the number, the lower the PNNI level.	0 - 104	80
[ComplexRepresentation]	Specifies whether or not this node uses complex node representation.	Yes, No	No
[NodeAtmAddress]	ATM address of the switch.		No default

Output Parameter	Description
[Node Index]	Identifier of a logical node on the switch.
[Node Level]	A bit-string length that indicates PNNI routing level.
[Node Id]	Logical node ID.
[Lowest]	Whether or not the switch acts as a lowest-level node or whether it is a logical node that becomes active when one of the other nodes in the switching system becomes a Peer Group Leader. Possible values are: True and False.
[Admin Status]	Indicates administrative status of the switch. Possible values are: Up and Down.
[Oper Status]	Indicates operational status of the switch. Possible values are: Up and Down.

Output Parameter	Description
[Node ATM Address]	ATM address of the switch.
[Peer Group Id]	Identifier of the peer group of which the switch is a part.
[Rst Transit]	Whether or not the switch is restricted to not allowing support of SVCs transiting it. Possible values are: True and False.
[Complex Rep.]	Whether or not the switch uses the complex node representation. Possible values are: True and False. True indicates complex node representation is used. False indicates simple node representation is used.
[Rst Branching]	Whether or not the switch is able to support additional point-to-multipoint branches. Possible values are: True and False. False indicates additional branches can be supported. True indicates additional branches cannot be supported.
[DB Overload]	Whether or not the switch is currently operating in topology database overload state. Possible values are: True or False.
[Ptse]	Number of PTSEs currently in the topology database of the switch.

Descriptions

Operator	Parameters / Permissions	Description
add pnninode	[NodeIndex] **<nodeindex>** [NodeLevel] **<nodelevel>** [ComplexRepresentation] **<complexrepresentation>** Administrator	Adds a logical node at the switch.
delete pnninode	[NodeIndex] **<nodeindex>** Administrator	Deletes a logical node at the switch.
modify pnniNode	[NodeIndex] **<nodeindex>** [NodeLevel] **<nodelevel>** [AtmAtmAddress] **<atmaddress>** Administrator	Changes a logical node at the switch.
show pnniNode	Administrator	Displays PNNI node information for the switch.

Examples

```
switch_prompt # add pnninode
NodeIndex(2)                              :
NodeLevel(72)                             :
ComplexRepresentation(N)                  :

switch_prompt #

switch_prompt # delete pnninode
NodeIndex(1)                              : 2

PNNI Node Information
================================================================================
Node Index   : 2
Level        : 72
Node Id      : 48:50:39:00:00:00:00:00:00:00:00:00:00:00:00:20:d4:28:de:ff:00
Lowest       : FALSE
Admin Status : UP
Oper Status  : UP
ATM Address  : 39:00:00:00:00:00:00:00:00:00:28:de:80:00:20:d4:28:de:ff:01
Peer Group Id: 48:39:00:00:00:00:00:00:00:00:00:00:00
Rst Transit  : FALSE
Complex Rep  : FALSE
Rst Branching: FALSE
DB Overload  : FALSE
Ptse         : 2

Are you sure you want to delete the node (yes/No)? : y
The node has been deleted successfully.

switch_prompt #
```

```
switch_prompt # modify pnninode
NodeIndex(1)                              :
Level(80)                                 :
AtmAddress(39:00:00:00:00:00:00:00:00:01:28:DE:80:00:20:D4:28:DE:FF:00):

switch_prompt # show pnninode
NodeIndex(1)                              :
================================================================================
Node Index   : 1
Level        : 80
Node Id      : 50:a0:39:00:00:00:00:00:00:00:00:01:28:de:80:00:20:d4:28:de:ff:00
Lowest       : TRUE
Admin Status : UP
Oper Status  : UP
ATM Address  : 39:00:00:00:00:00:00:00:00:00:01:28:de:80:00:20:d4:28:de:ff:00
Peer Group Id: 50:39:00:00:00:00:00:00:00:00:01:00:00:00
Rst Transit  : FALSE
Complex Rep  : FALSE
Rst Branching: FALSE
DB Overload  : FALSE
Ptse         : 23

switch_prompt #
```

PnniNodeTimer

Use PnniNodeTimer to set or display PNNI protocol timer values.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[NodeIndex]	Identifier for a logical node on the switch.	Positive integer	1
[PtseHolddown]	Initial value for the PTSE holddown timer to limit the rate at which the switch can re-originate PTSEs.	Positive integer in units of 100 microseconds	10
[HelloHolddown]	Initial value for the Hello holddown timer that limits the rate at which the switch sends Hellos.	Positive integer in units of 100 microseconds	10
[HelloInterval]	Interval at which the switch sends one Hello packet in absence of triggered Hellos.	Positive integer in units of seconds	15
[HelloInactivityFactor]	Number of Hello intervals allowed to pass without receiving a Hello before the Hello FSM declares the link down.	Positive integer	5
[HLinkInactivityTime]	Time a switch continues to advertise a horizontal (logical) link for which it has not received and processed a LGN horizontal link information group.	Positive integer in units of seconds	120
[PTSERefreshInterval]	Interval at which the switch drives origination PTSEs in the absence of triggered updates.	Positive integer in units of seconds	1800
[PTSELifetimeFactor]	A value (expressed as a percentage) used to calculate the initial time of self-originated PTSEs. The result of multiplying the PTSERefreshInterval by this value is the initial lifetime the switch places into self-originated PTSEs.	Positive integer from 101-1000	200

Input Parameter	Description	Value/Field Size	Default
[RxmtInterval]	Interval between retransmissions of unacknowledged database summary packets, PTSE request packets, and PTSPs.	Positive integer in units of seconds.	5
[PeerDelayedAckInterval]	Interval between transmissions of delayed PTSE acknowledgment packets.	Positive integer in units of 100 microseconds.	10

Output Parameter	Description
[Node Index]	Identifier for a logical node on the switch.
[Ptse Holddown]	Initial value for the PTSE holddown timer to limit the rate at which the switch can re-originate PTSEs.
[Hello Holddown]	Initial value for the Hello holddown timer that limits the rate at which the switch sends Hellos.
[Hello Interval]	Interval at which the switch sends one Hello packet in absence of triggered Hellos.
[Hello Inactivity Factor]	Number of Hello intervals allowed to pass without receiving a Hello before the Hello FSM declares the link down.
[Horizontal Link Inactivity Time]	Time a switch continues to advertise a horizontal (logical) link for which it has not received and processed a LGN horizontal link information group.
[Ptse Refresh Interval]	Interval at which the switch drives origination PTSEs in the absence of triggered updates.
[Ptse Lifetime Factor]	A value (expressed as a percentage) used to calculate the initial time of self-originated PTSEs. The result of multiplying the PTSERefreshInterval by this value is the initial lifetime the switch places into self-originated PTSEs.
[Rxmt Interval]	Interval between retransmissions of unacknowledged database summary packets, PTSE request packets, and PTSPs.
[Peer Delayed Ack Interval]	Interval between transmissions of delayed PTSE acknowledgment packets.
[AvCR PM]	Proportional multiplier used in the algorithms that determine significant change for AvCR parameters, expressed as a percentage.

Output Parameter	Description
[AvCR MT]	Minimum threshold used in the algorithms that determine significant change for AvCR parameters, expressed as a percentage.
[CVD PM]	Proportional multiplier used in algorithms that determine significant change for CDV metrics, expressed as a percentage.
[CTD PM]	Proportional multiplier used in the algorithms that determine significant change for CTC metrics, expressed as a percentage.

Descriptions

Operator	Parameters / Permissions	Description
modify pnninodetimer	[PtseHolddown] **<ptseholddown>** [HelloHolddown] **<helloholddown>** [HelloInterval] **<hellointerval>** [HelloInactivityFactor] **<helloinactivityfactor>** [HorizontalLinkInactivityTimer] **<horizontallinkinactivitytimer>** [PTSERefreshInterval] **<ptserefreshinterval>** [PTSELifetimeFactor] **<ptselifetimefactor>** [RxmInterval] **<rxminterval>** [PeerDelayedAckInterval] **<peerdelayedackinterval>** Administrator	Sets PNNI protocol timer values.
show pnninodetimer	Administrator	Displays PNNI protocol timer values.

Examples

```
switch_prompt # set pnninodetimer
NodeIndex(1)                          : 1
PtseHolddown(10)                      : 20
HelloHolddown(10)                     : 20
HelloInterval(15)                     :
HelloInactivityFactor(5)              :
HorizontalLinkInactivityTime(120)     :
PtseRefreshInterval(1800)             :
PtseLifeTimeFactor(200)               :
RxmtInterval(5)                       :
PeerDelayedAckInterval(10)            :

switch_prompt #

switch_prompt # show pnninodetimer

PNNI Node Timer
================================================================================
Node Index                            : 1
Ptse Holddown                         : 20 (units of 100 millisecs)
Hello Holddown                        : 20 (units of 100 millisecs)
Hello Interval                        : 15 secs
Hello Inactivity Factor               : 5
Horizontal Link Inactivity Time       : 120 secs
Ptse Refresh Interval                 : 1800 secs
Ptse Lifetime Factor                  : 200
Rxmt Interval                         : 5 secs
Peer Delayed Ack Interval             : 10 (units of 100 millisecs)
AvCR PM                               : 32
AvCR MT                               : 3
CDV PM                                : 19
CTD PM                                : 32

switch_prompt #
```

PnniPeerGroupId

Use PnniPeerGroupId to set the peer group ID of a logical node on the switch.

Operators

`modify`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[NodeIndex]	Identifier for a logical node on the switch.	Positive integer	1
[PeerGroupId]	The ID of the peer group of which this node is to become a member.		No default

Descriptions

Operator	Parameters/Permissions	Description
`modify pnnipeergroupid`	`[NodeIndex]` **`<nodeindex>`** Administrator	Sets the peer group ID of a logical node on the switch.

Examples

```
switch_prompt # set pnnipeergroupid
NodeIndex(1)                              :
PeerGroupId(50:39:00:00:00:00:00:00:00:00:00:00:00:00):

switch_prompt #
```

PnniPglElection

Use PnniPglElection to set or display PNNI peer group election characteristics for the switch. The characteristics are with respect to a specific logical node on the switch (identified by the NodeIndex input parameter).

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[NodeIndex]	Identifier of a logical node on the switch.	Positive integer	1
[LeadershipPriority]	Leadership priority value of the logical node. The switch advertises this value to the peer group of that logical node.	Positive integer	1
[ParentNodeIndex]	Index of parent node of logical node. This applies only if the logical node has a parent at a higher level in the PNNI hierarchy.	Positive integer	2
[InitTime]	Time in seconds the switch delays advertising its choice of preferred Peer Group Leader (PGL). The timer begins after the switch has initialized operation and reached the Full state with at least one neighbor in the peer group.	Positive integer	15
[OverrideDelay]	Time in seconds the switch waits for itself to be declared the preferred PGL by unanimous agreement among its peers. In the absence of unanimous agreement, this is the time that passes before the switch considers a two thirds majority as sufficient agreement to declare itself PGL, abandoning the attempt to get unanimous agreement.	Positive integer	30
[ReElectionTime]	Time in seconds after losing connectivity to the current PGL that the switch waits before re-starting the process of electing a new PGL.	Positive integer	15

Output Parameter	Description
[NodeIndex]	Identifier of a logical node on the switch.
[LeadershipPriority]	Leadership priority value of the logical node. The switch advertises this value to the peer group of that logical node.
[ParentNodeIndex]	Index of parent node of logical node. This applies only if the logical node has a parent at a higher level in the PNNI hierarchy.
[InitTime]	Time in seconds the switch delays advertising its choice of preferred Peer Group Leader (PGL). The timer begins after the switch has initialized operation and reached the Full state with at least one neighbor in the peer group.
[OverrideDelay]	Time in seconds the switch waits for itself to be declared the preferred PGL by unanimous agreement among its peers. In the absence of unanimous agreement, this is the time that passes before the switch considers a two thirds majority as sufficient agreement to declare itself PGL, abandoning the attempt to get unanimous agreement.
[ReElectionTime]	Time in seconds after losing connectivity to the current PGL that the switch waits before re-starting the process of electing a new PGL.
[Time Stamp]	Time at which the current PGL established itself.
[Election State]	Indicates the state that the switch is in with respect to the PGL election that takes place in the peer group. Possible values are: Starting, Awaiting, Awaiting Full, Initial Delay, Calculating, Await Unanimity, Operating as PGL, Operating not as PGL, Hung Election, and Waiting Reelection.
[Preferred PGL]	Indicates the preferred PGL of the peer group.
[Peer Group Leader]	Identifier of the node that is currently PGL. If a PGL has not been elected, this parameter is set to (all) zero(s).
[Active Parent Node Id]	Node identifier used by the PGL to represent this peer group at the next level of the hierarchy. If this node is at the highest level of the hierarchy or if no PGL has been elected yet, the PNNI Protocol Entity sets the value of this parameter to NULL.

Descriptions

Operator	Parameters / Permissions	Description
modify pnnipglelection	[NodeIndex] **<nodeindex>** [LeadershipPriority] **<leadershippriority>** [ParentNodeIndex] **<parentnodeindex>** [InitTime] **<inittime>** [OverrideDelay] **<override delay>** [ReElectionTime] **<reelectiontime>** Administrator	Sets PNNI election parameters for the switch.
show pnnipglelection	[NodeIndex] **<nodeindex>** Administrator	Displays PNNI election parameters for the switch.

Examples

```
switch_prompt # modify pnnipglelection

NodeIndex(1)                            :
LeadershipPriority(52)                  :
ParentNodeIndex(2)                      :
InitTime(15)                            : 20
OverrideDelay(30)                       : 35
ReElectTime(15)                         : 20

switch_prompt #

switch_prompt # show pnnipglelection
NodeIndex(1)                            :

PGL Election Information
================================================================================
Node Index            : 1
Leadership Priority   : 1
Parent Node Index     : 2
Init Time             : 15 secs
Override Delay        : 30 secs
Reelect Time          : 15 secs
Time Stamp            : 12411
Election State        : Operating as PGL
Preferred PGL         : 50:a0:39:00:00:00:00:00:00:00:00:00:28:de:80:00:20:d4:28:de:ff:00
Peer Group Leader     : 50:a0:39:00:00:00:00:00:00:00:00:00:28:de:80:00:20:d4:28:de:ff:00
Active Parent Node Id : 48:50:39:00:00:00:00:00:00:00:00:00:00:00:00:20:d4:28:de:ff:00

switch_prompt #
```

PnniPtse

Use PnniPtse to display PTSEs stored in the topology database of the switch.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[Num]	Index number assigned by the console that indicates which node originating the PTSE is displayed. Use the **show pnniptse all** command to get a list of index numbers.	Positive integer or All	All

Output Parameter	Description
[Num]	Index number assigned by the console that indicates which node originating the PTSE is displayed.
[Originating Node Id]	Identifier of the node that originated the PTSE(s).
[Ptse Count]	Number of PTSEs from the originating node in the topological database of the switch.
If you give a specific [Num], the **show pnniptse** command displays the following additional fields.	
[Type]	Type of information contained in the PTSE. Possible values are: Nodal State Parameters, Nodal Information, Internal Addresses, Exterior Addresses, Horizontal Links, and Uplinks.
[Ptse Id]	PTSE identifier assigned to the PTSE by its originator.
[Seq Num]	Sequence number of the instance of the PTSE as it appears in the local topology database.
[Checksum]	The value of the PTSE checksum as it appears in the local topology database.
[Lifetime]	The value of the remaining lifetime for the given PTSE as it appears in the local topology database (expressed in seconds).

Descriptions

Operator	Parameters / Permissions	Description
show pnniptse	[Num] **<num>** Administrator	Displays PTSEs in topology database of switch.

Examples

```
switch_prompt # show pnniptse
Num(ALL)                                :

No.  Originating Node Id                                                  Ptse Count
=============================================================================================
  1  50:a0:39:00:00:00:00:00:00:00:00:14:4a:00:00:20:d4:14:4a:00:00   3
  2  50:a0:39:00:00:00:00:00:00:00:00:14:bf:80:00:20:d4:14:bf:80:00   2
  3  50:a0:39:00:00:00:00:00:00:00:00:14:c0:80:00:20:d4:14:c0:80:00   2

switch_prompt #

switch_prompt # show pnniptse  1

PTSE from Node #1
Node Id : 50:a0:39:00:00:00:00:00:00:00:00:14:4a:00:00:20:d4:14:4a:00:00


Type  Description             PTSE Id   Seq No.  Checksum   Lifetime
=============================================================================
 97   Nodal information          1         5      22746       0 secs
288   Horizontal links           2         4      23862      99 secs
256   Exterior address           4         4      50355     337 secs

switch_prompt #
```

PnniReachableAddress

Use PnniReachableAddress to display a list of reachable addresseses from the switch. The addresses are advertised by remote logical nodes that are visible to the switch (logical nodes from which the switch receives database information).

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[Num]	Index number of the reachable address as assigned by the console. Use **show pnnireachableaddress ALL** to get a list of index numbers.	Positive integer or All	All

Output Parameter	Description
[Num]	Index number of the reachable address as assigned by the console.
[Reachable Address]	Reachable address from a logical node on the switch.
[Advertising Node Id]	Node ID of the remote node advertising the reachable address.
If you give a specific [Num}, the **show pnnireachableaddress** command displays the following additional fields.	
[Node Index]	Identifier of a logical node on the switch (local node that is linked to the remote advertising node).
[Adver. Port Id]	Identifier of the port at the advertising node that leads to the reachable address.
[Address Index]	Secondary index assigned by the console to distinguish between multiple reachable addresses advertised by the same remote node.
[ATM Address]	Reachable address from a logical node on the switch.
[Prefix Length]	Prefix length of the given reachable address.

Descriptions

Operator	Parameters / Permissions	Description
show pnnireachableaddress	[Num] **<num>** Administrator	Displays information on all reachable addresses from each node visible to the switch.

Examples

```
switch_prompt # show pnnireachableaddress
Num(ALL)                                  :

Num      Reachable Address
         Advertising Node Id
================================================================================
1        39:00:00:00:00:00:00:00:00:00:14:41:80:00:00:00:00:00:00:00
         48:50:39:00:00:00:00:00:00:00:00:00:00:00:00:00:20:d4:14:41:ff:00

2        47:00:79:00:00:00:00:00:00:00:00:00:00:a0:3e:00:00:01
         48:50:39:00:00:00:00:00:00:00:00:00:00:00:00:00:20:d4:14:41:ff:00

3        39:00:00:00:00:00:00:00:00:00:28:e6:00:00:00:00:00:00:00:00
         48:50:39:00:00:00:00:00:00:00:00:00:00:00:00:00:20:d4:14:41:ff:00

4        39:00:00:00:00:00:00:00:00:00:28:c1:80:00:00:00:00:00:00:00
         48:50:39:00:00:00:00:00:00:00:00:00:00:00:00:00:20:d4:14:41:ff:00

5        39:00:00:00:00:00:00:00:00:00:14:59:00:00:00:00:00:00:00:00
         48:50:39:00:00:00:00:00:00:00:00:00:00:00:00:00:20:d4:14:41:ff:00

switch_prompt # show pnnireachableaddress
Num(ALL)                                  : 3

Reachable Address Num 3
================================================================================
Node Index    : 1
Adver. Node Id: 48:50:39:00:00:00:00:00:00:00:00:00:00:00:00:00:20:d4:14:41:ff:0
0
Adver. Port Id: 0
Address Index : 6
ATM Address   : 39:00:00:00:00:00:00:00:00:00:28:e6:00:00:00:00:00:00:00:00
Prefix Length : 104

switch_prompt #
```

PnniScopeMapping

Use PnniScopeMapping to set or display the mappings of membership and connection scope from UNI to PNNI terms. The mappings are from the perspective of a logical node on the switch.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[NodeIndex]	Identifier for a logical node on the switch.	Positive integer	1
[LocalNetwork]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value localNetwork(1).	0-104	96
[LocalNetworkPlusOne]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value localNetworkPlusOne(2).	0-104	96
[LocalNetworkPlusTwo]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value localNetworkPlusTwo(3).	0-104	96
[SiteMinusOne]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value siteMinusOne(4).	0-104	80
[IntraSite]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value intraSite(5).	0-104	80
[SitePlusOne]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value sitePlusOne(6).	0-104	72
[OrganizationMinusOne]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value organizationMinusOne(7).	0-104	72

Input Parameter	Description	Value/Field Size	Default
[IntraOrganization]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value intraOrganization(8).	0-104	64
[OrganizationPlusOne]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value organizationPlusOne(9).	0-104	64
[CommunityMinusOne]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value communityMinusOne(10).	0-104	64
[IntraCommunity]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value intraCommunity(11).	0-104	48
[CommunityPlusOne]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the organizational scope value communityPlusOne(12).	0-104	48
[Regional]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value regional(13).	0-104	32
[InterRegional]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value interRegional(14).	0-104	32
[Global]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value global(15).	0-104	0

Output Parameter	Description
[Node Index]	Identifier for a logical node on the switch.
[Local Network]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value localNetwork(1).

Output Parameter	Description
[Local Network Plus One]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value localNetworkPlusOne(2).
[Local Network Plus Two]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value localNetworkPlusTwo(3).
[SiteMinusOne]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value siteMinusOne(4).
[Intra Site]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value intraSite(5).
[Site Plus One]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value sitePlusOne(6).
[Organization Minus One]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value organizationMinusOne(7).
[Intra Organization]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value intraOrganization(8).
[Organization Plus One]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value organizationPlusOne(9).
[Community Minus One]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value communityMinusOne(10).
[Intra Community]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value intraCommunity(11).
[Community Plus One]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the organizational scope value communityPlusOne(12).
[Regional]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value regional(13).
[Inter Regional]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value interRegional(14).
[Global]	Highest level of PNNI hierarchy (smallest PNNI routing level) that lies within the UNI scope value global(15).

Descriptions

Operator	Parameters / Permissions	Description
modify pnniscopemapping	[NodeIndex] **<nodeindex>** [LocalNetwork] **<localnetwork>** [LocalNetworkPlusOne] **<localnetworkplusone>** [LocalNetworkPlusTwo] **<localnetworkplustwo>** [SiteMinusOne] **<siteminusone>** [IntraSite] **<intrasite>** [SitePlusOne] **<siteplusone>** [OrganizationMinusOne] **<organizationminusone>** [IntraOrganization] **<intraorganization>** [OrganizationPlusOne] **<organizationplusone>** [CommunityMinusOne] **<communityminusone>** [IntraCommunity] **<intracommunity>** [CommunityPlusOne] **<communityplusone>** [Regional] **<regional>** [Global] **<global>**	Sets mappings of membership and organizational scope between UNI and PNNI.
show pnniscopemapping	Administrator	Displays mappings of membership and organizational scope between UNI and PNNI.

Examples

```
switch_prompt # modify pnniscopemapping
NodeIndex(1)                          :
LocalNetwork(96)                      :
LocalNetworkPlusOne(96)               :
LocalNetworkPlusTwo(96)               :
SiteMinusOne(80)                      :
IntraSite(80)                         :
SitePlusOne(72)                       :
OrganizationMinusOne(72)              :
IntraOrganization(64)                 :
OrganizationPlusOne(64)               :
CommunityMinusOne(64)                 :
IntraCommunity(48)                    :
CommunityPlusOne(48)                  :
Regional(32)                          :
InterRegional(32)                     :
Global(0)                             :

switch_prompt #
```

```
switch_prompt # show pnniscopemapping
NodeIndex(1)                              :

PNNI Scope Mapping
================================================================================
Node Index                        : 1
Local Network                     : 96
Local Network Plus One            : 96
Local Network Plus Two            : 96
Site Minus One                    : 80
Intra Site                        : 80
Site Plus One                     : 72
Organization Minus One            : 72
Intra Organization                : 64
Organization Plus One             : 64
Community Minus One               : 64
Intra Community                   : 48
Community Plus One                : 48
Regional                          : 32
Inter Regional                    : 32
Global                            : 0

switch_prompt #
```

PnniStats

Use PnniStats to display PNNI statistics for the switch.

Operators

show

Parameters

This parameter has no input parameters. Just enter **show pnnistats** at the switch prompt.

Output Parameter	Description
[Highest Version]	The highest version of PNNI protocol that the switch supports.
[Lowest Version]	The lowest version of PNNI protocol that the switch supports.
[DTL Count Originator]	Number of DTL stacks that the switch has originated as the DTLOriginator and placed into signalling messages. This includes the initial DTL stacks computed by the switch. It also includes any alternate route (second choice, third choice, etc.) DTL stacks computed by the switch in response to crankbacks.
[Crankback Count Originator]	Number of connection setup messages including DTL stacks originated by the switch that have cranked back to the at all levels of the hierarchy.
[Alternate Route Count Originator]	Number of alternate DTL stacks that the switch has computed and placed into signalling messages as the DTLOriginator.
[Route Fail Count Originator]	Number of times the switching system failed to compute a viable DTL stack as the DTLOriginator for some call. It indicates the number of times a call was cleared from this switching system due to originator routing failure.
[Route Fail Unreachable Originator]	Number of times the switching system failed to compute a viable DTL stack as the DTLOriginator because the destination was unreachable; that is, those calls that are cleared with the following in the cause information element (IE): Specified Transit Network Unreachable, or Destination Unreachable.

Descriptions

Operator	Parameters / Permissions	Description
show pnnistats	Administrator	Shows PNNI statistics for the switch.

Examples

```
switch_prompt # show pnnistats

PNNI Base Information
================================================================================
Highest Version                   : 1.0
Lowest Version                    : 1.0
DTL Count Originator              : 0
DTL Count Border                  : 1
Crankback Count Originator        : 0
Crankback Count Border            : 0
Alternate Route Count Originator  : 0
Alternate Route Count Border      : 0
Route Fail Count Originator       : 0
Route Fail Count Border           : 0
Route Fail Unreachable Originator : 0
Route Fail Unreachable Border     : 0

switch_prompt #
```

PnniSummaryAddress

Use PnniSummaryAddress to manage summary address prefixes for the switch. A summary address is an abbreviation of a set of addresses, represented by an address prefix that all of the summarized addresses have in common. The switch advertises this information. Calls to any destinations matching the summary address may be routed to the switch.

Operators

`add, delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[Num]	Index number of the summary address as assigned by the console. Use the **`show pnnisummaryaddress all`** command to get a list of index numbers.	Positive integer or All	All
[Node Index]	Identifier of a logical node on the switch.	Positive integer	1
[SummaryAddress]	ATM end system address prefix for the summary.		No default
[PrefixLength]	The prefix length (in bits) for the summary.		No default
[SummaryType]	Address type.	Internal, Exterior	Internal
[Suppress]	Whether or not the switch advertises the summaries to its peer group. Possible values are: True and False. False specifies the summary is advertised. True specifies the summary is not advertised (is suppressed).	False, True	False

Output Parameter	Description
[Num]	Index number of the summary address as assigned by the console.
[Summary Address]	ATM end system address prefix for the summary.
[Summary Type]	Address type.

Output Parameter	Description
[Suppress]	Whether or not the switch advertises the summaries to its peer group.

If you give a specific [Num], the **`show pnnisummaryaddress`** command displays the following additional fields.

[Node Index]	Identifier of a logical node on the switch.
[Prefix Length]	Prefix length for the summary.
[State]	Whether or not the summary is currently being advertised by the switch to peer group. Possible values are: Active, Advertised, or Inactive.

Descriptions

Operator	Parameters / Permissions	Description
`add pnnisummaryaddress`	`[NodeIndex]` **`<nodeindex>`** `[SummaryAddress]` **`<summaryaddress>`** `[PrefixLength]` **`<prefixlength>`** `[SummaryType]` **`<summarytype>`** `[Suppress]` **`<suppress>`** Administrator	Sets parameters to configure a physical interface for PNNI routing.
`delete pnnisummaryaddress`	`[NodeIndex]` **`<nodeindex>`** `[SummaryAddress]` **`<summaryaddress>`** `[PrefixLength]` **`<prefixlength>`** Administrator	Deletes configuration for a physical interface for PNNI routing.
show pnnisummaryaddress	`[Num]` **`<num>`** Administrator	Displays current configuration settings for PNNI routing.

Examples

```
switch_prompt  # add pnnisummaryaddress

NodeIndex(1)                              :
SummaryAddress()                          : 45:00:01
PrefixLength(152)                         : 24
SummaryType(Internal)                     :
Suppress(False)                           :

switch_prompt #

switch_prompt # delete pnnisummaryaddress
NodeIndex(1)                              :
SummaryAddress()                          : 45:00:01
PrefixLength(152)                         : 24

Summary Address #1
================================================================================
Summary Address : 45:00:01
Prefix Length   : 24
Summary Type    : Internal
Suppress        : False
State           : Inactive

The summary address was deleted successfully.

switch_prompt #

switch_prompt # show pnnisummaryaddress

Num(ALL)                                   :

Num    Summary Address                            Summary Type   Suppress
================================================================================
  1    34:00:00:00:00:00:00:00:00:00:00:01          I        False
  2    35:00:01                                     I        False
  3    39:00:00:00:00:00:00:00:00:14:bf:80          I        False
  4    47:00:01                                     I        False


switch_prompt #

switch_prompt # show pnnisummaryaddress 1

Summary Address #1
================================================================================
Summary Address : 34:00:00:00:00:00:00:00:00:00:00:01
Prefix Length   : 104
Summary Type    : Internal
Suppress        : False
State           : Advertised

switch_prompt #
```

PnniSvccRcc

Use PnniSvccRcc to display status of the switched virtual channel connection (SVCC) used by the routing control channel (RCC) of a logical node on the switch.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[NodeIndex]	Identifier of a logical node on the switch.	Positive integer	1
[SvccRccIndex]	Index number of the SVCC as assigned by the console.	Positive integer or All	All

Output Parameter	Description
[Svcc Rcc Index]	Index number of the SVCC as assigned by the console.
[VPI]	Virtual path identifier of the SVCC.
[VCI]	Virtual channel identifier of the SVCC.
[Port]	Physical port number on the switch.
[Rcv Hellos]	Number of Hello packets received by the switch.
[Xmt Hellos]	Number of Hello packets transmitted from the switch.
[Hello State]	Indicates the state of the Hello protocol from the logical node. Possible values are: Down, Attempt, 1WayInside, 2WayInside, 1WayOutside, 2WayOutside, and CommonOutside.

Descriptions

Operator	Parameters / Permissions	Description
show pnnisvccrcc	[NodeIndex] **<nodeindex>** [SvccRccIndex] **<svccrccindex>** Administrator	Displays status of the SVCC used as the routing control channel for the logical node.

Examples

```
switch_prompt # show pnnisvccrcc
NodeIndex(2)                              : 2
SvccRccIndex(ALL)                         :

Svcc Rcc Index   VPI   VCI  Port  Rcv Hellos  Xmt Hellos  Hello State
================================================================================
  1              0      32   1A1      113472    113534     2WayInside

switch_prompt #
```

PnniTnsRoute

Use PnniTnsRoute to manage routes to transit networks that are visible to the switch.

Operators

`add, delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[Num]	Index number of the route as assigned by the console. Use the **`show pnnitnsroute all`** command to get a list of index numbers.	Positive integer or All	All
[PortNumber]	Port number on the switch. You can specify a physical or virtual port.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), or All	All
[TnsType]	Transit network ID type.	NationNetworkId, Other	NationalNetworkId
[TnsPlan]	Transit network ID plan.	CarrierIdCode, Other	CarrierIdCode
[TnsId]	Transit network ID.		No default
[TnsIndex]	Index into the set of listings of connectivity to a given transit network from the switch.	Positive integer	0
[RouteType]	Type of reachability from the switch to the transit network.	Exterior, Other	Exterior
[PnniScope]	PNNI scope of advertisement (level of PNNI hierarchy) from the switch to the route.		0
[MetricsTag]	Metrics tag assigned to the connection with the transit network.		0

Output Parameter	Description
[Node Index]	Identifier of a logical node on the switch.
[TNS Type]	Transit network ID type. Possible values are: NationNetworkId and Other.
[TNS Plan]	Transit network ID plan. Possible values are: CarrierCodeId or Other.
[TNS ID]	Transit network ID.
[Index]	Index into the set of listings of connectivity to a given transit network from the switch.
[Port Number]	Sequence number of the instance of the PTSE as it appears in the local topology database. An integer in hexidecimal format.
[Adv Node Id]	The value of the PTSE checksum as it appears in the local topology database. An integer in hexadecimal format.
[Adv Port Id]	The value of the remaining lifetime for the given PTSE as it appears in the local topology database. Expressed in seconds.
[Route Type]	Type of reachability from the switch to the transit network. Possible values are: Exterior and Other.
[Protocol]	Routing mechanism used to determine connectivity between the switch and the reachable address prefix. Possible values are: Other, Local, Mgmt, and PNNI.
[Scope]	PNNI scope of advertisement (level of PNNI hierarchy) from the switch to the route.
[Vp Cap.]	Whether or not VPCs can be established from the advertising node to the transit network.
[Metrics Tag]	Metrics tag assigned to the connection with the transit network.
[PTSE Id]	For reachable addresses learned through PNNI, this parameter contains the value of the PTSE identifier for the PTSE that is originated by the originating node and contains the information group(s) describing the reachable address. For reachable addresses learned by means other than PNNI, this parameter is set to zero.
[Oper Status]	Whether or not the reachable address prefix is operationally valid and whether it is advertised by this node. Possible values are: Advertised, Active, and Inactive.

Descriptions

Operator	Parameters / Permissions	Description
add pnnitnsroute	[PortNumber] **<portnumber>** [TnsType] **<tnstype>** [TnsPlan] **<tnsplan>** [TnsId] **<tnsid>** [Index} **<index>** [RouteType] **<routetype>** [PnniScope] **<pnniscope>** [MetricsTag] **<metricstag>** Administrator	Adds a TNS route from the switch.
delete pnnitnsroute	[TnsType] **<tnstype>** [TnsPlan] **<tnsplan>** [TnsId] **<tnsid>** [Index] **<index>** Administrator	Deletes a TNS route from the switch.

Examples

```
switch_prompt # add pnnitnsroute

PortNumber()                              : 1A2
TnsType(NationalNetworkId)                :
TnsPlan(CarrierIdCode)                    :
TnsId()                                   : 90:00:00:01
Index(0)                                  :
RouteType(Exterior)                       :
PnniScope(0)                              :
MetricsTag(0)                             :

switch_prompt # delete pnnitnsroute
TnsType(NationalNetworkId)                :
TnsPlan(CarrierIdCode)                    :
TnsId()                                   : 39:00:00:01
Index(0)                                  :
Transit Network Route Number 0
================================================================================
Node Index  : 1
TNS Type    : NationalNetworkId
TNS Plan    : CarrierIdCode
TNS ID      : 90:00:00:01
Index       : 0x0
Port Number : A1.0
Adv Node Id : 50:a0:39:00:00:00:00:00:00:00:00:28:de:80:00:20:d4:28:de:ff:00
Adv Port Id : 0x1000
Route Type  : Exterior
Protocol    : MGMT
Scope       : 0
Vp Cap.     : True
Metrics Tag : 0x0
PTSE  Id    : 0x0
Oper Status : Advertised
Time Stamp  : 0x605489

The TNS route was deleted successfully.

switch_prompt #


switch_prompt # show pnnitnsroute
Num(ALL)                                  :

Num Port        TNS Type          TNS Plan      TNS Id    TNS Index  Type Proto
================================================================================
1   1A2       NationalNetworkId CarrierIdCode 90:00:00:01          0 E    MGMT
2   --        NationalNetworkId CarrierIdCode 90:00:00:01       4369 E    PNNI

switch_1 #
```

Port

Use Port to add or delete a virtual port on the switch.

Note You can hot-swap TSMs. Hot-swapping is replacing a module when the chassis is powered up. If you replace a TSM with another TSM of the same type (same I/O ports), existing configuration of port parameters is not affected. This includes parameters set using any of the following attributes: ATMRoute, CACServiceClassBw, IlmiConfig, NetPrefix, Port, PortConfig, PVC, PVP, ServiceRegistry, SigTimer, SigStatistics, SSCOPConfig, and SSCOPStatistics. If you replace a TSM with another TSM of a different type, existing configuration of port parameters is deleted. The deletion occurs when the new module is plugged into the chassis backplane.

Operators

`add, delete`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1.*n* to 8B4.*n*	No default
[PortAdminStatus]	Enables/disables administrative status of the port. If the port is Down, it remains idle with no activity (such as signalling, ILMI, or PVCs).	Up, Down	Up
[IlmiAdminStatus]	Enables/disables ILMI status of the port.	Up, Down	Up
[SigType]	Type of signalling on the port. autoConfig means ILMI determines signalling type by negotiation (hence ILMI cannot be disabled for SigType autoConfig). pvcUni and pvcNni disable signalling.	autoConfig, uni30, uni31, uni40 iisp30, iisp31, pnni10, uniPvc, nniPvc	autoConfig
[SigRole]	Signalling role.	Other, Network, User	Other

Input Parameter	Description	Value/Field Size	Default
[InterfaceType]	Interface type.	Public, Private	Private
[MaxVpiBits]	Maximum number of VPI bits.	0-6	No default
[MaxVciBits]	Maximum number of VCI bits.	6-12	No default
[MaxSvcVpci]	Maximum VPCIs available for SVCs.	0-[$2^{(MaxVpiBits)}$-1]	No default
[MinSvcVci]	Minimum VCIs available for SVCs.	32-[$2^{(MaxVciBits)}$-1]	No default
[MaxVccs]	Maximum number of VCCs available.	32-[$2^{(MaxVpiBits+ MaxVciBits)}$]	No default
[TrafficDescriptorIndex]	Traffic descriptor of the virtual path originating/terminating on this virtual port.	Positive integer	No default

Descriptions

Operator	Parameters/Permissions	Description
add port	[PortNumber] **<portnumber>** [PortAdminStatus] **<portadminstatus>** [Ilmiadminstatus] **<ilmiadminstatus>** [SigType] **<sigtype>** [SigRole] **<sigrole>** [InterfaceType] **<interfacetype>** [MaxVpiBits] **<maxvpibits>** [MaxVciBits] **<maxvcibits>** [MaxSvcVpci] **<maxsvcvpci>** [MinSvcVci] **<minsvcvci>** [MaxVccs] **<maxvccs>** [TrafficDescriptorIndex] **<trafficdescriptorindex>** All	Adds a virtual port.
delete port	[PortNumber] <portnumber> Administrator	Deletes a virtual port.

Examples

```
switch prompt #  add port

PortNumber()                            : 1a1.1
PortAdminStatus(up)                     :
IlmiAdminStatus(enable)                 :
SigType(autoConfig)                     :
SigRole(other)                          :
InterfaceType(private)                  :
MaxVpiBits(0)                           :
MaxVciBits(10)                          :
MaxSvcVpci(0)                           :
MinSvcVci(32)                           :
MaxVccs(1024)                           :
TrafficDescriptorIndex()                : 2

switch_prompt #

switch_prompt #  delete port

PortNumber()                            : 1a1.1

switch_prompt #
```

PortClockMode

Use PortClockMode to set the clock mode of a switch port.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Physical port number on the switch.	1A1 to 8B4 or All	All
[PortClkMode]	Clocking mode (see Table 2-7).	Local, Loop, Network	Local

Output Parameter	Description
[Port Number]	Physical port number on the switch.
[Configured Mode]	Configured clock mode.
[Actual Mode]	Actual clock mode.

Descriptions

Operator	Parameters/Permissions	Description
`modify portclockmode`	`[PortNumber]` **`<portnumber>`** `[PortClkMode]` **`<portclkmode>`** Administrator	Sets the clock mode used at each port.
`show portclockmode`	Administrator	Displays the clock mode used at each port.

Table 2-7 Port Clock Modes

Mode	Description
Loop	Port clock is set to looped timing.
Local	Port clock is set to split timing using the local clock on the switch.
Network	Port clock is set to split timing using the network clock of the switch.

Examples

```
switch_prompt # show portclockmode
PortNumber(ALL)                          :
Port Number         Configured Mode     Actual Mode
================================================================================
7A1                 local               local
7A2                 local               local
7A3                 local               local
7A4                 local               local
7B1                 local               local
7B2                 local               local
7B3                 local               local

switch_prompt # set portclockmode
PortNumber(ALL)                          : 7a1
PortClkMode(local)                       : loop

switch_prompt #

switch_prompt # show portclockmode
PortNumber(ALL)                          :
Port Number         Configured Mode     Actual Mode
================================================================================
7A1                 loop                loop
7A2                 local               local
7A3                 local               local
7A4                 local               local
7B1                 local               local
7B2                 local               local
7B3                 local               local

switch_prompt #
```

PortConfig

Use PortConfig to manage configuration of switch ports.

Note You can hot-swap TSMs. Hot-swapping is replacing a module when the chassis is powered up. If you replace a TSM with another TSM of the same type (same I/O ports), existing configuration of port parameters is not affected. This includes parameters set using any of the following attributes: ATMRoute, CACServiceClassBw, IlmiConfig, NetPrefix, Port, PortConfig, PVC, PVP, ServiceRegistry, SigTimer, SigStatistics, SSCOPConfig, and SSCOPStatistics. If you replace a TSM with another TSM of a different type, existing configuration of port parameters is deleted. The deletion occurs when the new module is plugged into the chassis backplane.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports, or All	All
[PortAdminStatus]	Enables/disables administrative status of the port. If the port is Down, it remains idle with no activity (such as signalling, ILMI, or PVCs).	Up, Down	Up
[IlmiAdminStatus]	Enables/disables ILMI status of the port.	Up, Down	Up
[SigType]	Type of signalling on the port. autoConfig means ILMI determines signalling type by negotiation (hence ILMI cannot be disabled for SigType autoConfig). pvcUni and pvcNni disable signalling.	autoConfig, uni30, uni31, uni40 iisp30, iisp31, pnni10, uniPvc, nniPvc	autoConfig
[SigRole]	Signalling role.	Other, Network, User	Other
[InterfaceType]	Interface type.	Public, Private	Private

Input Parameter	Description	Value/Field Size	Default
[MaxVpiBits]	Maximum number of VPI bits.	0-6	No default
[MaxVciBits]	Maximum number of VCI bits.	6-12	No default
[MaxSvcVpci]	Maximum VPCIs available for SVCs.	$0-[2^{(MaxVpiBits)} - 1]$	No default
[MinSvcVci]	Minimum VCIs available for SVCs.	$32-[2^{(MaxVciBits)} - 1]$	No default
[MaxVccs]	Maximum number of VCCs available.	$32-2^{(MaxVpiBits + MaxVciBits)}$	No default
[MaxSvpVpci]	Maximum number of VPCIs available for SVPs.	$0-[2^{(MaxVpiBits)} - 1]$	No default
[MaxVpcs]	Maximum number of VPCs.	$0-2^{(MaxVpiBits)}$	No default

Note If you hot-swap a TSM with a TSM of a different type (different I/O ports), port configuration of the originial TSM is deleted. Before you insert a replacement TSM, you can display existing port configuration using the **`show`** operator with the **`/o`** option (for example: **`show portconfig /o`**).

In the Output Parameter table below, (**`</d>`**) indicates parameters that are available only through the **`show portconfig /d`** (detailed) command. The display shows both current and configured state of the parameters.

Output Parameter	Description
[Port Name]	Port number on the switch. (Same as the [PortNumber] input parameter.)
[Intf Type]	Interface type. (Same as the [InterfaceType] input parameter.)
[Sig Type]	Type of signaling on the port. Possible values are: autoConfig, uni30, uni31, uni40, iisp30, iisp31, pnni10, pvcUni, pvcNni.
[ILMI State]	ILMI status of the port. Possible values are: Up or Down.
[Trans Type]	Type of physical interface.
[Media Type]	Type of media.

Output Parameter	Description
[Max Bw (MBS)]	Maximum port bandwidth.
[Used Bw (MBS)]	Port bandwidth used.
[Sig Role] **</d>**	Signaling role.
[Max Vpi bits] **</d>**	Maximum number of VPI bits.
[Max Vci bits] **</d>**	Maximum number of VCI bits.
[Max SVC Vpci] **</d>**	Maximum number of VPCIs available for SVCs
[Max SVC Vci] **</d>**	Maximum number of VCIs available for SVCs.
[Max Vccs] **</d>**	Maximum number of VCCs.
[Max Svp Vpci] **</d>**	Maximum number of VPCIs available for SVPs.
[Max Vpcs] **</d>**	Maximum number of VPCs.
[Port State] **</d>**	Port operational and administrative states.
[Port Bandwidth] **</d>**	Maximum and used port bandwidth.

Descriptions

Operator	Parameters/Permissions	Description
modify portconfig	[PortNumber] **<portnumber>** [PortAdminStatus] **<portadminstatus>** [IlmiAdminStatus] **<ilmiadminstatus>** [SigType] **<sigtype>** [SigRole] **<sigrole>** [InterfaceType] **<interfacetype>** [MaxVpiBits] **<maxvpibits>** [MaxVciBits] **<maxvcibits>** [MaxSvcVpci] **<maxsvcvpci>** [MinSvcVci] **<maxvcvci>** [MaxVccs] **<maxvccs>** [MaxSvpVpci] **<maxsvpvpci>** [MaxVpcs] **<maxvpcs>** Administrator	Sets port configuration.

Operator	Parameters/Permissions	Description
show portconfig	[PortNumber] <**portnumber**> All	Displays port configuration.

Examples

```
switch_prompt # show portconfig
PortNumber(ALL)                          :

Port    Intf     Sig         ILMI   Trans    Media     Max     Used    Oper
Name    Type     Type        State  Type     Type      Bw(MBS) Bw(MBS) State
=============================================================================
CPU     private  uni40       down                      155.0    10.50  up
CPU.1   private  pnni10      down                       10.50    0.0   up
7A1     private  pnni10      up     STS-3c   MMF (S)   155.0     0.0   up
7A2     private  autoConfig  down   STS-3c   MMF (S)   155.0     0.0   down
7A3     private  pnni10      up     STS-3c   MMF (S)   155.0     0.0   up
7A4     private  autoConfig  down   STS-3c   MMF (S)   155.0     0.0   down
7B1     private  autoConfig  down   STS-3c   MMF (S)   155.0     0.0   down
7B2     private  autoConfig  down   STS-3c   MMF (S)   155.0     0.0   down
7B3     private  autoConfig  down   STS-3c   MMF (S)   155.0     0.0   down

switch_prompt #

switch_prompt # modify portconfig
PortNumber()                             : 7a1
PortAdminStatus(up)                      : down
IlmiAdminStatus(up)                      :
SigType(autoConfig)                      :
SigRole(other)                           :
InterfaceType(private)                   :
MaxVpiBits(0)                            :
MaxVciBits(13)                           :
MaxSvcVpci(0)                            :
MinSvcVci(32)                            :
MaxVccs(8192)                            :
MaxSvpVpci(0)                            :
MaxVpcs(0)                               :

Smart6500_1 # NOTICE - 'tZLinkStatus' Port 7A1 (49) DOWN

switch_prompt #
```

```
switch_prompt # show portconfig /d
PortNumber(ALL)                          : 7a1
=========================================================
 Port Name  : 7A1
 Trans Type : STS-3c
 Media Type : MMF (S)
---------------------------------------------------------
 Parameters             Configured        Current
---------------------------------------------------------
 Sig Type                autoConfig       autoConfig
 Sig Role                other            other
 Interface Type          private          private
 Max Vpi Bits            0                0
 Max Vci Bits            13               13
 Max Svc Vpci            0                0
 Min Svc Vci             32               32
 Max Vccs                8192             8192
 Max Svp Vpci            0                0
 Max Vpcs                0                0
 ILMI State              Admin State up   Oper State down
 Port State              Admin State down Oper State down
 Port Bandwidth          Max 155.0  MBS   Used   0.0  MBS

switch_prompt #
```

PortMode

Use PortMode to manage transmission characteristics of switch ports.

Note See Table 2-8 for supported I/O modules (and corresponding port types).

Operators

`modify, show`

Parameters

In the parameter tables below, text in parenthesis indicates parameters that appear only for particular port types. For example, [EmptyCell] appears only if you use **`modify portmode`** or **`show portmode`** on 34 Mbps or 45 Mbps ports.

Input Parameter	Description	Field Size/Value	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4 or All	All
[PortMode] [Mode]	Port physical mode.	for 34 Mbps: ADM, ADM751, PLCP for 45 Mbps: PLCP, HCS for155 Mbps: SONET, SDH for 622 Mbps: SONET, SDH	No default
[Scrambling] (34, 45, 622 Mbps)	Enables or disables scrambling. Scrambling is bit-level signal processing applied to data streams prior to transmission. Scrambling can reduce signal interference.	for 34 Mbps: Off, On for 45 Mbps: Off, On for 622 Mbps: Off, On	Off
[EmptyCell] (34, 45 Mbps)	Type of cells sent as filler when the port is not sending data.	for 34 Mbps: Unassigned, Idle for 45 Mbps: Unassigned, Idle	Unassigned
[Framing] (45 Mbps only)	Type of framing used.	CBIT, CCHANNEL	
[Length] (45 Mbps only)	Line length for port (corresponds to length of cable attached to port). GT225 means the cable is greater than 225 feet. LT225 means the cable is less than 255 feet.	GT225, LT225	

Input Parameter	Description	Field Size/Value	Default
[Timing] (622 Mbps only)	Enables or disables timing at the port. Timing can improve speed matching and sequencing of transmissions between the switch and network.	Disabled, Enabled	Disabled

Output Parameter	Description
[Port ID]	Port number. (Same as the [PortNumber] input parameter.)
[Frame Type] (155, 622 Mbps)	Port physical Mode. (Same as the [PortMode] input parameter.)
[Scrambling] (34, 45, 622 Mbps)	Enables or disables scrambling. Scrambling is bit-level signal processing applied to data streams prior to transmission. Scrambling can reduce signal interference.
[EmptyCell] (34, 45 Mbps)	Type of cells sent as filler when the port is not sending data.
[Framing] (45 Mbps only)	Type of framing used.
[Length] (45 Mbps only)	Line length for port (corresponds to length of cable attached to port). GT225 means the cable is greater than 225 feet. LT225 means the cable is less than 255 feet.
[Timing] (622 Mbps only)	Enables or disables timing at the port. Timing can improve speed matching and sequencing of transmissions between the switch and network.

Descriptions

Operator	Parameters/Permissions	Description
modify portmode	[PortNumber]<**portnumber**> [PortMode]<**portmode**> Administrator	Sets transmission characteristics of switch ports.
show portmode	[PortNumber]<**portnumber**> All	Displays transmission characteristics of switch ports.

Table 2-8 I/O Module ID Numbers

Face Plate Number	Physical Specification
IOM-21-4	155 Mbps OC-3/STM-1, MMF/SC (4 port)
IOM-22-4	155 Mbps STS-3c/STM-1, UTP-5/RJ-45 (4 port)
IOM-29-4	155 Mbps OC-3/STM-1, SMF-IR/SC (1 port) MMF/SC (3 port)
IOM-29-4-IR	155 Mbps OC-3/STM-1, SMF-IR/SC (4 port)
IOM-29-4-LR	155 Mbps OC-3/STS-1, SMF-LR/SC (4 port)
IOM-31-1	622 Mbps OC-12/STM-4, MMF/SC (1 port)
IOM-39-1	622 Mbps OC-12/STM-4, SMF-IR/SC (1 port)
IOM-39-1-LR	622 Mbps OC-12/STM-4, SMF-LR/SC (1 port)
IOM-67-4	45 Mbps DS-3, Coax/BNC (4 port)
IOM-77-4	34 Mbps E-3, Coax/BNC (4 port)

Examples

```
switch_prompt # show portconfig
PortNumber(ALL)                          :

Port    Intf     Sig         ILMI   Trans    Media     Max     Used    Oper
Name    Type     Type        State  Type     Type      Bw(MBS) Bw(MBS) State
=============================================================================
1A1     private  autoConfig  down   STS-3c   CAT5 UTP  155.0     0.0   down
1A2     private  autoConfig  down   STS-3c   CAT5 UTP  155.0     0.0   down
1A3     private  autoConfig  down   STS-3c   CAT5 UTP  155.0     0.0   down
2B1     private  autoConfig  down   DS3      Coax       42.66    0.0   down
2B2     private  pnni10      up     DS3      Coax       42.66    0.0   up
CPU     private  uni40       down                      155.0    10.50  up
CPU.1   private  pnni10      down                      10.50    0.0   up

switch_prompt #

switch_prompt # show portmode 2b2

 Port      Type   Mode     Framing    EmptyCell    Scrambling     Length
=============================================================================
 2B2        DS3    PLCP     CBIT       UNASSIGNED   Off            GT225

switch_prompt # set portmode 2b2

Mode(PLCP)                               :
Framing(CBIT)                            : cchannel
EmptyCell(UNASSIGNED)                    :
Scrambling(Off)                          :
Length(GT225)                            :

NOTICE - 'tConsole' Port 2B2 (6) DOWN

switch_prompt # NOTICE - 'tZLinkStatus' Port 2B2 (6) UP

switch_prompt # show portmode 1b2

 Port      Type   Mode     Framing    EmptyCell    Scrambling     Length
=============================================================================
 2B2        DS3    PLCP     CCHANNEL   UNASSIGNED   Off            GT225

switch_prompt #
```

PortStat

Use PortStat to display or clear traffic statistics for switch ports.

Operators

`show, clear`

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4 or All	All

Output Parameter	Description
[Port ID]	Same as [PortNumber] input parameter.
[Total OAM Cells Received]	Total OAM (operations and maintenance) cells the system received.
[Total RM Cells Received]	Total cells dropped when the switch drops cells (includes those dropped when unknown VCs (virtual circuits) and CLP1 (cell loss priority) cells are dropped).
[Total Cells Dropped]	Total cells dropped across the system. (includes those dropped when unknown VCs (virtual circuits) and CLP1 (cell loss priority) cells are dropped).
[Total Unknown VC Cells Dropped]	Total unknown VC cells dropped.
[Total CLP1 Cells Received]	Total CLP1 cells received.
[Total CLP1 Cells Dropped]	Total CLP1 cells dropped.

Descriptions

Operator	Parameters/Permissions	Descriptions
show portstat	[PortNumber] <**portnumber**> All	Displays ATM statistics for a given port or all ports, represented in number of cells. These statistics relate to network resources management, congestion, and performance issues. The counter has a 32-bit maximum before it wraps around. Enter **show portstat /d** (detail) to obtain more details about the ports. Use clear portstat to reset port statistic counters.
clear portstat	[PortNumber] <**portnumber**> All	Clears the ATM cell counts and reinitializes all port statistics to "0" for the specified port or all ports. This command clears only the software values and does not flush the hardware registers, which might have counts accumulated since the registers were last read.

Examples

```
switch_prompt # show portstat

PortNumber(ALL)                          :

Port ID     OAM     RM      CLP1   Unk VC   CLP1     Total
            Recvd   Recvd   Recvd  Dropped  Dropped  Dropped
=============================================================================
1A1              0       0       0       0        0        0
1A2              0       0       0       0        0        0
1A3              0       0       0       0        0        0
1A4              0       0       0   13839        0    13839
2B1              0       0       0       0        0        0
2B2              0       0       0       0        0        0
CPU              0       0       0       0        0        0
switch_prompt #
```

```
switch_prompt # show portstat /d
PortNumber(ALL)                          :

Port 1A1      Statistics
================================================================================
OAM Cells Received             : 0
RM Cells Received              : 0
CLP1 Cells Received            : 0
Unknown VC Cells Dropped       : 0
CLP1 Cells Dropped             : 0
Total Cells Dropped            : 0

Port 1A2      Statistics
================================================================================
OAM Cells Received             : 0
RM Cells Received              : 0
CLP1 Cells Received            : 0
Unknown VC Cells Dropped       : 0
CLP1 Cells Dropped             : 0
Total Cells Dropped            : 0

Port 1A3      Statistics
================================================================================
OAM Cells Received             : 0
RM Cells Received              : 0
CLP1 Cells Received            : 0
Unknown VC Cells Dropped       : 0
CLP1 Cells Dropped             : 0
Total Cells Dropped            : 0

Port 1A4      Statistics
================================================================================
OAM Cells Received             : 0
RM Cells Received              : 0
CLP1 Cells Received            : 0
Unknown VC Cells Dropped       : 13851
CLP1 Cells Dropped             : 0
Total Cells Dropped            : 13851
OAM Cells Received             : 0
RM Cells Received              : 0
CLP1 Cells Received            : 0
Unknown VC Cells Dropped       : 0
CLP1 Cells Dropped             : 0
Total Cells Dropped            : 0

Port 2B1     Statistics
================================================================================
OAM Cells Received             : 0
RM Cells Received              : 0
CLP1 Cells Received            : 0
Unknown VC Cells Dropped       : 0
CLP1 Cells Dropped             : 0
Total Cells Dropped            : 0

Port 2B2     Statistics
================================================================================
OAM Cells Received             : 0
RM Cells Received              : 0
CLP1 Cells Received            : 0
Unknown VC Cells Dropped       : 0
CLP1 Cells Dropped             : 0
Total Cells Dropped            : 0
```

```
CPU Statistics
================================================================================
OAM Cells Received              : 0
RM Cells Received               : 0
CLP1 Cells Received             : 0
Unknown VC Cells Dropped        : 16777215
CLP1 Cells Dropped              : 0
Total Cells Dropped             : 16777215
switch_prompt #
```

PortTrafficCongestion

Use PortTrafficCongestion to manage traffic congestion at switch ports. You can program the values for the minimum and maximum threshold (in number of cells) for a specified priority queue. If the number of cells received by the switch on the specified priority queue for a port exceeds the maximum threshold, the switch discards the cell.

Note You program values for minimum and maximum threshold by entering index numbers that correspond to cell numbers. Use MinMaxTableIndex to see the correspondance between index numbers and cell numbers.

Operators

`modify, show`

Parameters

Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4 or All	All
[QueueNumber]	Priority queue.	1-5	No default
[MinIndexNumber]	Index number for minimum cell threshold value. Enter **`show minmaxtable`** to view possible values.	0-15	No default
[MaxIndexNumber]	Index number for maximum cell threshold value. Enter **`show minmaxtable`** to view possible values.	0-15	No default

Output Parameter	Description
[Port ID]	Port number on the switch.
[QueueId]	Priority queue. (Same as the [QueueNumber] input parameter.)
[ServiceClass]	Service category. Possible values are: CBR, RTVBR, NRTVBR, ABR, and UBR.
[MinIndex]	Index number for minimum cell threshold value. (Same as the [MinIndexNumber] input parameter.)

Output Parameter	Description
[MinValue]	Minimum cell threshold value (in number of cells).
[MaxIndex]	Index number for maximum cell threshold value. (Same as the [MaxIndexNumber] input parameter.)
[MaxValue]	Maximum cell threshold value (in number of cells).

Descriptions

Operator	Parameters/Permissions	Description
modify porttrafficcongestion	[PortNumber] <**portnumber**> [QueueNumber] **<queuenumber>** [MinIndexNumber] **<minindexnumber>** [MaxIndexNumber] **<maxindexnumber>** Administrator	Sets traffic congestion parameters for a specified port. You can change the minimum and maximum buffer thresholds (in cells) for each priority queue. Cell buffer memory then reserves the minimum buffer size for cells on the specified priority queue of that port. Cells are discarded when the maximum buffer threshold is reached. Use MinMaxTable to view possible values for minimum and maximum threshold
show porttrafficcongestion	[PortNumber] <**portnumber**> All	Displays traffic congestion settings for ports. The minimum buffer threshold is reserved in cell buffer memory for cells in the specified priority queue for the given port. Cells are discarded when the maximum buffer threshold is reached.

Examples

```
switch_prompt # show porttrafficcongestion
PortNumber(ALL)                          :

PortID QueueId ServiceClass MinIndex MinValue MaxIndex MaxValue

================================================================================
CPU    1       CBR          10       64       15       1024
CPU    2       RTVBR        8        256      13       4096
CPU    3       NRTVBR       8        256      13       4096
CPU    4       ABR          8        256      12       8192
CPU    5       UBR          8        256      12       8192

PortID QueueId ServiceClass MinIndex MinValue MaxIndex MaxValue

================================================================================
7A1    1       CBR          10       64       15       1024
7A1    2       RTVBR        8        256      13       4096
7A1    3       NRTVBR       8        256      13       4096
7A1    4       ABR          8        256      12       8192
7A1    5       UBR          8        256      12       8192

switch_prompt #

switch_prompt # show minmaxtableindex
----------------------------------------
MinIndex  MinValue  MaxIndex  MaxValue
----------------------------------------
0         65536     0         1048576
1         32768     1         786432
2         16384     2         524288
3         8192      3         393216
4         4096      4         262144
5         2048      5         196608
6         1024      6         131072
7         512       7         98304
8         256       8         65536
9         128       9         49152
10        64        10        32768
11        32        11        16384
12        16        12        8192
13        8         13        4096
14        4         14        2048
15        0         15        1024

switch_prompt #

switch_prompt # modify porttrafficcongestion 7a1
QueueNumber()                            : 3
MinIndexNumber()                         : 9
MaxIndexNumber()                         : 14

switch_prompt #
```

```
switch_prompt # modify porttrafficcongestion 7b3
PortID QueueId ServiceClass MinIndex MinValue MaxIndex MaxValue

================================================================================
7B3    1       CBR          10       64       15       1024
7B3    2       RTVBR        8        256      13       4096
7B3    3       NRTVBR       9        128      14       2048
7B3    4       ABR          8        256      12       8192
7B3    5       UBR          8        256      12       8192

switch_prompt #
```

Privilege

Use Privilege to manage the privilege level of the current user.

Operators

`show, enable, disable`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[Password]	Current password for that privilege level.	0-8 characters	No default

Descriptions

Operator	Parameters/Permissions	Description
`show privilege`	All	Displays the privilege level of the current user. The two available levels are Administrator and Read Only.
`enable`	`[Password] <`**`currentpassword`**`>` Read Only	Raises the privilege level. There are two levels in the switch—Read-Only and Administrator. If you are logged on with a Read-Only privilege status and then issue this command, the switch prompts you for the Administrator [Password] before allowing access to Administrator commands.
`disable`	Administrator	Lowers the privilege level from Administrator to Read Only. No password is required.

Examples

```
switch_prompt # show privilege
The current user is Administrator
switch_prompt #

switch_prompt # enable
password: ********
switch_prompt # disable
The current user is ReadOnly
switch_prompt #
```

Prompt

Use Prompt to control how the switch prompt is displayed on the console monitor.

Operators

`modify`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[Prompt]	New prompt name.	1-25 characters	switch_prompt

Descriptions

Operator	Parameters/Permissions	Description
`modify prompt`	`[Prompt] <`**`newpromptname`**`>` Administrator	Changes the displayed prompt on your console monitor.

Example

```
switch_prompt # set prompt
Prompt(switch_prompt) : My_Switch
My_Switch #
```

PVC

Use PVC to manage PVCs on the switch. You assign two physical or virtual ports on the switch as PVC endpoints.

Note When you add the PVC, the endpoints are called Port 1 and Port 2 (corresponding to order of entry). For subsequent action on the PVC (activate, deactivate, show, delete), the endpoints are called High Port and Low Port. High and Low are based on the lexical order of the port numbers. For example, port 2B1 is higher than port 1B1, port 2B2 is higher than port 2B1, and so on.

Operators

`activate, add, clear, deactivate, delete, show`

Note You can hot-swap TSMs. Hot-swapping is replacing a module when the chassis is powered up. If you replace a TSM with another TSM of the same type (same I/O ports), existing configuration of port parameters is not affected. This includes parameters set using any of the following attributes: ATMRoute, CACServiceClassBw, IlmiConfig, NetPrefix, Port, PortConfig, PVC, PVP, ServiceRegistry, SigTimer, SigStatistics, SSCOPConfig, and SSCOPStatistics. If you replace a TSM with another TSM of a different type, existing configuration of port parameters is deleted. The deletion occurs when the new module is plugged into the chassis backplane.

Parameters

Input Parameter	Description	Value/Field Size	Default
[ConnType]	Connection type. Possible values are: Point-to-point (PTP) or Multipoint (PMP).	PTP, PMP	PTP
[Port-1-Number]	Number of the first port assigned to the connection.	1A1 to 8B4, 1A1.*n* to 8B4.*n*	No default
[Port-1-VPCI]	VPCI associated with Port 1.	Positive integer	No default
[Port-1-VCI]	VCI associated with Port 1.	Positive integer	No default
[Port-2-Number]	Number of the second port assigned to the connection.	1A1 to 8B4	No default

Input Parameter	Description	Value/Field Size	Default
[Port-2-VPCI]	VPCI associated with Port 2.	Positive integer	No default
[Port-2-VCI]	VCI associated with Port 2.	Positive integer	No default
[Port1-to-Port2TrafficDescriptorIndex]	Index of the traffic descriptor for the direction of flow from Port 1 to Port 2. Create this traffic descriptor before creating the PVC.	Positive integer	No default
[Port2-to-Port1TrafficDescriptorIndex]	Index of the traffic descriptor for the direction of flow from Port 2 to Port 1. Create this traffic descriptor before creating the PVC.	Positive integer	No default
[LowPortNumber]	Number of the Low Port (based on lexical order).	1A1 to 8B4	No default
[Low VPCI]	VPCI of the Low Port.	Positive integer	No default
[LowVCI]	VCI of the Low Port.	Positive integer	No default
[HighPortNumber]	Number of the High Port (based on lexical order).	1A1 to 8B4	No default
[HighVPCI]	VPCI of the High Port.	Positive integer	No default
[HighVCI]	VCI of the High Port.	Positive integer	No default
[PortNumber]	Physical port number on the switch.	1A1 to 8B4	No default
[CrossConnectId]	Cross-connect ID of the PVC (as assigned by switch software). Use the **`show pvc all`** command to get a list of cross-connect IDs. Each PTP PVC has a unique cross-connect ID. PMP PVCs might have the same cross-connect ID but different cross-connect sub IDs.	Positive integer	No default
[CrossConnectSubId]	Cross-connect sub-ID of the PVC (as assigned by switch software). Each PTP PVC and PMP PVC has a unique cross-connect sub-ID.	Positive integer	No default

In the Output Parameter table below, (**</d>**) indicates parameters that are available only through the **show pvc /d** (detailed) command.

Output Parameter	Description
[Conn Id]	Cross-connect ID of the PVC (as assigned by switch software). Each PTP PVC has a unique cross-connect ID. PMP PVCs might have the same cross-connect ID but different cross-connect sub IDs.
[Conn SubId]	Cross-connect sub-ID of the PVC. Each PTP PVC and PMP PVC has a unique cross-connect sub-ID.
[Low Port]	Number of the Low Port (based on lexical order).
[Low VPCI]	VPCI of the Low Port.
[Low VCI]	VCI of the Low Port.
[Low Type]	Connection type from perspective of Low Port.
[High Port]	Number of the High Port (based on lexical order).
[High VPCI]	VPCI of the High Port.
[High VCI]	VCI of the High Port.
[High Type]	Connection type from perspective of High Port.
[Admin Status]	Administrative status of the PVC. Possible values are: Up or Down.
[Low - High Traffic Decs Index (TX)] **</d>**	Index of the traffic descriptor in the direction of flow from Low Port to High Port.
[High - Low Traffic Decs Index (RX)] **</d>**	Index of of the traffic descriptor in the direction of flow from High Port to Low Port.
[Low to High Operation Status] **</d>**	Operational status of low-to-high connection. Possible values are: Up or Down.
[High to Low Operation Status] **</d>**	Operational status of high-to-low connection. Possible values are: Up or Down.
[Port Status] **</d>**	Operational status of port.
[Creation Time] **</d>**	Time the PVC was created (relative to the switch boot time).

Output Parameter	Description
[Traffic Type (High-Low)]	Traffic type in the high-to-low direction.
[Early Packet Discard (High-Low)] **</d>**	Early packet discard as calculated by CAC for the cross connect in the high-to-low direction .
[Cell Loss Ratio (High-Low)] **</d>**	Cell loss ratio in the high-to-low direction.
[Cumulative Cell Delay Variation (High-Low)] **</d>**	Cumulative cell delay variation in the high-to-low direction.
[Max Cell Transfer Delay (High-Low)] **</d>**	Maximum cell transfer delay in the high-to-low direction.
[Cumulative Cell Transfer Delay (High-Low)] **</d>**	Cumulative cell transfer delay in the high-to-low direction.
[Number of Cells Received in High-Low Direction] **</d>**	Number of cells received in the high-to-low direction.
[Number of Cells Dropped in High-Low Direction] **</d>**	Number of cells dropped in the high-to-low direction.
[Traffic Type (Low-High)] **</d>**	Traffic type in the low-to-high direction.
[Early Packet Discard (Low-High)] **</d>**	Early packet discard as calculated by CAC for the cross connect in the low-to-high direction.
[Cell Loss Ratio (Low-High)] **</d>**	Cell loss ratio in the low-to-high direction.
[Cumulative Cell Delay Variation (Low-High)] **</d>**	Cumulative cell delay variation in the low-to-high direction.
[Max Cell Transfer Delay (Low-High)] **</d>**	Maximum cell transfer delay in the low-to-high direction.
[Cumulative Cell Transfer Delay (Low-High)] **</d>**	Cumulative cell transfer delay in the low-to-high direction.
[Number of Cells Received in High-Low Direction] **</d>**	Number of cells received in the low-to-high direction.
[Number of Cells Dropped in High-Low Direction] **</d>**	Number of cells dropped in the low-to-high direction.

Descriptions

Operator	Parameters / Permissions	Description
activate pvc	[LowPortNumber] **<lowportnumber>** [LowVPCI] **<lowvpci>** [LowVCI] **<lowvci>** [HighPortID] **<highportnumber>** [LowVPCI] **<lowvpci>** [HighVCI] **<highvci>** Administrator	Activates the PVC specified. Administrative status is set to Up.
add pvc	[Port-1-Number] **<port1number>** [Port-1-VPCI] **<port1vpci>** [Port-1-VCI] **<port1vci>** [Port-2-Number] **<port2number>** [Port-2-VPCI] **<port2vpci>** [Port-2-VCI] **<port2vci>** [Port1-to-Port2TrafficDescriptorIndex] **<port1toport2trafficdescriptorindex>** [Port2-to-Port1TrafficDescriptorIndex] **<port2toport1trafficdescriptorindex>** Administrator	Adds the specified PVC.
clear pvc	Administrator	Deletes all PVCs.
deactivate pvc	[LowPortNumber] **<lowportnumber>** [LowVPCI] **<lowvpci>** [LowVCI] **<lowvci>** [HighPortID] **<highportnumber>** [LowVPCI] **<lowvpci>** [HighVCI] **<highvci>** Administrator	Deacrivates the specified PVC. Admin status is set to Down.
delete pvc	[LowPortNumber] **<lowportnumber>** [LowVPCI] **<lowvpci>** [LowVCI] **<lowvci>** [HighPortID] **<highportnumber>** [LowVPCI] **<lowvpci>** [HighVCI] **<highvci>** Administrator	Deletes the specified PVC.
show pvc	[PortNumber] **<portnumber>** [CrossConnectID] **<crossconnectid>** [CrossConnectSubID] **<crossconnectsubid>** Administrator	Displays the specified PVC.

Examples

```
switch_prompt # show pvc
PortNumber(ALL)                          :
CrossConnectId(ALL)                      :
CrossConnectSubId(ALL)                   :

=========================================================================
Conn Conn  |         Low           |         High             | Admin
Id   SubId | Port   VPCI  VCI  Type| Port   VPCI  VCI    Type | Status
=========================================================================
2    1       1A1     0    33   PTP   7A3     0    16     PTP    UP
6    1       1A2     0    37   PTP   7A3     0    18     PTP    UP
7    1       2B3     0    38   PTP   6A1     0    5      PTP    UP

Total number of PVCs = 3

switch_prompt #

switch_prompt # add pvc

ConnType(PTP)                          :
Port-1-Number()                        : 3a3
Port-1-VPCI                            : 0
Port-1-VCI()                           : 33
Port-2-Number()                        : 1b4
Port-2-VPCI()                          : 0
Port-2-VCI()                           : 18
Port1-to-Port2TrafficDescriptor        : 1
Port1-to-Port2TrafficDescriptorIndex() : 1

switch_prompt #

switch_prompt # show pvc
PortNumber(ALL)                          :
CrossConnectId(ALL)                      :
CrossConnectSubId(ALL)                   :

=========================================================================
Conn Conn  |         Low           |         High             | Admin
Id   SubId | Port   VPCI  VCI  Type| Port   VPCI  VCI    Type | Status
=========================================================================
2    1       1A1     0    33   PTP   7A3     0    16     PTP    UP
6    1       1A2     0    37   PTP   7A3     0    18     PTP    UP
7    1       2B3     0    38   PTP   6A1     0    5      PTP    UP
8    1       1B4     0    18   PTP   3A3     0    33     PTP    DOWN

Total number of PVCs = 4

switch_prompt #
```

```
switch_prompt # show pvc /d
PortNumber(ALL)                          : 7a3
CrossConnectId(ALL)                      : 2
CrossConnectSubId(ALL)                   :
=================================================================
Cross Connect Id                                 : 2
Cross Connect Sub Id                             : 1
Low Port                                         : 1A1
Low Vpci                                         : 0
Low Vci                                          : 33
Low - High Traffic Desc Index                    : 176
High - Low Traffic Desc Index                    : 176
Low Connection Type                              : PTP
High Port                                        : 7A3
High Vpci                                        : 0
High Vci                                         : 16
High Connection Type                             : PTP
Admin Status                                     : UP
Low to High Operation status                     : UP
High to Low Operation status                     : UP
Port Status                                      : Operational
Creation Time                                    : 0:0:0
Traffic Type (High-Low)                          : CBR
Early Packet Discard (High-Low)                  : DISABLED
Cell Loss Ratio (High-Low)                       : 0
Cumulative Cell Delay variation(High-Low)        : 0
Max Cell Transfer Delay(High-Low)                : 0
Cumulative Cell Transfer Delay(High-Low)         : 0
Number of Cells Received in High-Low Direction   : 1178891
Number of Cells Dropped in High-Low Direction    : 0
Traffic Type (Low-High)                          : CBR
Early Packet Discard (Low-High)                  : DISABLED
Cell Loss Ratio (Low-High)                       : 0
Cumulative Cell Delay variation(Low-High)        : 0
Max Cell Transfer Delay(Low-High)                : 0
Cumulative Cell Transfer Delay(Low-High)         : 0
Number of Cells Received in Low-High Direction   : 1178900
Number of Cells Dropped in Low-High Direction    : 0

Total number of PVCs = 1

switch_prompt #
```

PVCById

Use PVCById to manage a PVC by its cross-connect ID.

Operators

`activate, deactivate, delete`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[CrossConnectId]	Cross-connect ID of the PVC (as assigned by switch software). Use the **`show pvc all`** command to get a list of cross-connect IDs. Each PTP PVC has a unique cross-connect ID. PMP PVCs might have the same cross-connect ID but different cross-connect sub IDs.	Positive integer	No default
[CrossConnectSubId]	Cross-connect sub-ID of the PVC (as assigned by switch software). Each PTP PVC and PMP PVC has a unique cross-connect sub-ID.	Positive integer	No default

Descriptions

Operator	Parameters / Permissions	Description
`activate pvcbyid`	`[CrossConnectId]` **`<crossconnid>`** `[CrossConnectSubId]` **`<crossconnectsubid>`** Administrator	Activates the PVC. Administrative status is Up.
`deactivate pvcbyid`	`[CrossConnectId]` **`<crossconnid>`** `[CrossConnectSubId]` **`<crossconnectsubid>`** Administrator	Deactivates the PVC. Administrative status is Down.
`delete pvcbyid`	`[CrossConnectId]` **`<crossconnid>`** `[CrossConnectSubId]` **`<crossconnectsubid>`** Administrator	Deletes the PVC.

Examples

```
switch_prompt # activate pvcbyid
CrossConnId()                          : 2
CrossConnSubId()                       : 36
switch_prompt #

switch_prompt # deactivate pvcbyid
CrossConnId()                         : 2
CrossConnSubId()                      : 36
switch_prompt #

switch_prompt # delete pvcbyid
CrossConnectId()                      : 1
CrossConnectSubId()                   : 36
switch_prompt #
```

PVP

Use PVP to manage PVPs on the switch. You assign two physical ports on the switch as PVP endpoints.

Note When you add the PVP, the endpoints are called Port 1 and Port 2 (corresponding to order of entry). For subsequent action on the PVP (activate, deactivate, show, delete), the endpoints are called High Port and Low Port. High and Low are based on the lexical order of the port numbers. For example, port 2B1 is higher than port 1B1, port 2B2 is higher than port 2B1, and so on.

Operators

`activate, add, clear, deactiviate, delete, flush, show`

Note You can hot-swap TSMs. Hot-swapping is replacing a module when the chassis is powered up. If you replace a TSM with another TSM of the same type (same I/O ports), existing configuration of port parameters is not affected. This includes parameters set using any of the following attributes: ATMRoute, CACServiceClassBw, IlmiConfig, NetPrefix, Port, PortConfig, PVC, PVP, ServiceRegistry, SigTimer, SigStatistics, SSCOPConfig, and SSCOPStatistics. If you replace a TSM with another TSM of a different type, existing configuration of port parameters is deleted. The deletion occurs when the new module is plugged into the chassis backplane.

Parameters

Input Parameter	Description	Value/Field Size	Default
[ConnType]	Connection type. Currently, only Point-to-Point (PTP) is supported.	PTP	PTP
[Port-1-Number]	Number of the first port assigned to the connection.	1A1 to 8B4	No default
[Port-1-VPI]	VPI associated with Port 1.	Positive integer	No default
[Port-2-Number]	Number of the second port assigned to the connection.	1A1 to 8B4	No default
[Port-2-VPI]	VPI associated with Port 2.	Positive integer	No default

Input Parameter	Description	Value/Field Size	Default
[Port1-to-Port2TrafficDescriptorIndex]	Index of the traffic descriptor for the direction of flow from Port 1 to Port 2. Create this traffic descriptor before creating the PVC.	Positive integer	No default
[Port2-to-Port1TrafficDescriptorIndex]	Index of the traffic descriptor for the direction of flow from Port 2 to Port 1. Create this traffic descriptor before creating the PVC.	Positive integer	No default
[LowPortNumber]	Number of the Low Port (based on lexical order).	1A1 to 8B4	No default
[Low VPI]	VPI of the Low Port.	Positive integer	No default
[HighPortNumber]	Number of the High Port (based on lexical order).	1A1 to 8B4	No default
[HighVPI]	VPI of the High Port.	Positive integer	No default
[PortNumber]	Physical port number on the switch.	1A1 to 8B4	No default
[CrossConnectId]	Cross-connect ID of the PVP (as assigned by switch software). Use the **`show pvc all`** command to get a list of cross-connect IDs. Each PTP PVP has a unique cross-connect ID.	Positive integer	No default
[CrossConnectSubId]	Cross-connect sub-ID of the PVP (as assigned by switch software).	Positive integer	No default

In the Output Parameter table below, (**`</d>`**) indicates parameters that are available only through the **`show pvp /d`** (detailed) command.

Output Parameter	Description
[Conn Id]	Cross-connect ID of the PVP (as assigned by switch software). Each PTP PVP has a unique cross-connect ID. PMP PVPs might have the same cross-connect ID but different cross-connect sub IDs.
[Conn SubId]	Cross-connect sub-ID of the PVP. Each PTP PVP and PMP PVP has a unique cross-connect sub-ID.
[Low Port]	Number of the Low Port (based on lexical order).
[Low VPI]	VPI of the Low Port.

Output Parameter	Description
[Low Type]	Connection type from perspective of Low Port.
[High Port]	Number of the High Port (based on lexical order).
[High VPI]	VPI of the High Port.
[High Type]	Connection type from perspective of High Port.
[Admin Status]	Administrative status of the PVC. Possible values are: Up or Down.
[Low - High Traffic Decs Index (TX)] **</d>**	Index of the traffic descriptor in the direction of flow from Low Port to High Port.
[High - Low Traffic Decs Index (RX)] **</d>**	Index of of the traffic descriptor in the direction of flow from High Port to Low Port.
[Low to High Operation Status] **</d>**	Operational status of low-to-high connection. Possible values are: Up or Down.
[High to Low Operation Status] **</d>**	Operational status of high-to-low connection. Possible values are: Up or Down.
[Port Status] **</d>**	Operational status of port.
[Creation Time] **</d>**	Time the PVP was created (relative to the switch boot time).
[Traffic Type (High-Low)] **</d>**	Traffic type in the high-to-low direction.
[Early Packet Discard (High-Low)] **</d>**	Early packet discard as calculated by CAC for the cross connect in the high-to-low direction.
[Cell Loss Ratio (High-Low)] **</d>**	Cell loss ratio in the high-to-low direction.
[Cumulative Cell Delay Variation (High-Low)] **</d>**	Cumulative cell delay variation in the high-to-low direction.
[Max Cell Transfer Delay (High-Low)] **</d>**	Maximum cell transfer delay in the high-to-low direction.
[Cumulative Cell Transfer Delay (High-Low)] **</d>**	Cumulative cell transfer delay in the high-to-low direction.
[Number of Cells Received in High-Low Direction] **</d>**	Number of cells received in the high-to-low direction.

Output Parameter	Description
[Number of Cells Dropped in High-Low Direction] **</d>**	Number of cells dropped in the high-to-low direction.
[Traffic Type (Low-High) **</d>**	Traffic type in the low-to-high direction.
[Early Packet Discard (Low-High)] **</d>**	Early packet discard as calculated by CAC for the cross connect in the low-to-high direction.
[Cell Loss Ratio (Low-High)] **</d>**	Cell loss ratio in the low-to-high direction.
[Cumulative Cell Delay Variation (Low-High)] **</d>**	Cumulative cell delay variation in the low-to-high direction.
[Max Cell Transfer Delay (Low-High)] **</d>**	Maximum cell transfer delay in the low-to-high direction.
[Cumulative Cell Transfer Delay (Low-High)] **</d>**	Cumulative cell transfer delay in the low-to-high direction.
[Number of Cells Received in High-Low Direction] **</d>**	Number of cells received in the low-to-high direction.
[Number of Cells Dropped in High-Low Direction] **</d>**	Number of cells dropped in the low-to-high direction.

Descriptions

Operator	Parameters / Permissions	Description
activate pvp	[LowPortNumber] **<lowportnumber>** [LowVPI] **<lowvpci>** [HighPortID] **<highportnumber>** [LowVPI] **<lowvpci>** Administrator	Activates the PVP specified. Administrative status is set to Up.

Operator	Parameters / Permissions	Description
add pvp	[Port-1-Number] **<port1number>** [Port-1-VPI] **<port1vpci>** [Port-2-Number] **<port2number>** [Port-2-VPI] **<port2vpci>** [Port1-to-Port2TrafficDescriptorIndex] **<port1toport2trafficdescriptorindex>** [Port2-to-Port1TrafficDescriptorIndex] **<port2toport1trafficdescriptorindex>** Administrator	Adds the specified PVP.
clear pvp	Administrator	Deletes all PVPs.
deactivate pvp	[LowPortNumber] **<lowportnumber>** [LowVPI] **<lowvpci>** [HighPortID] **<highportnumber>** [LowVPI] **<lowvpci>** Administrator	Deactivates the specified PVP. Admin status is set to Down.
delete pvp	[LowPortNumber] **<lowportnumber>** [LowVPI] **<lowvpci>** [HighPortID] **<highportnumber>** [LowVPI] **<lowvpci>** Administrator	Deletes the specified PVP.
show pvp	[PortNumber] **<portnumber>** [CrossConnectID] **<crossconnectid>** [CrossConnectSubID] **<crossconnectsubid>** Administrator	Displays the specified PVP.

Examples

```
switch_prompt # add pvp
ConnType(PTP)                              :
Port-1-Number()                            : a2
Port-1-VPI()                               : 1
Port-2-Number()                            : a3
Port-2-VPI()                               : 1
Port1-to-Port2TrafficDescriptorIndex()     : 2
Port2-to-Port1TrafficDescriptorIndex()     : 7

switch_prompt # show pvp
PortNumber(ALL)                            :
CrossConnectId(ALL)                        :
CrossConnectSubId(ALL)                     :

=========================================================================
Conn Conn  |         Low      |         High      | Admin
Id   SubId | Port    VPI  Type| Port    VPI  Type | Status
=========================================================================
2     36     1A1      0   PTP    1A2      0   PTP    DOWN
3     37     1A2      1   PTP    1A3      1   PTP    UP

switch_prompt # show pvp /d
PortNumber(ALL)                            : 1a3
CrossConnectId(ALL)                        :
CrossConnectSubId(ALL)                     :
=================================================================
Cross Connect Id                                 : 3
Cross Connect Sub Id                             : 37
Low Port                                         : 1A2
Low Vpi                                          : 1
Low - High Traffic Desc Index                    : 2
High - Low Traffic Desc Index                    : 7
Low Connection Type                              : PTP
High Port                                        : 1A3
High Vpi                                         : 1
High Connection Type                             : PTP
Admin Status                                     : UP
Low to High Operation status                     : UP
High to Low Operation status                     : UP
Port Status                                      : Operational
Creation Time                                    : 0:0:0
Traffic Type (High-Low)                          : CBR
Early Packet Discard (High-Low)                  : DISABLED
Cell Loss Ratio (High-Low)                       : 0
Cumulative Cell Delay variation(High-Low)        : 0
Max Cell Transfer Delay(High-Low)                : 0
Cumulative Cell Transfer Delay(High-Low)         : 0
Number of Cells Received in High-Low Direction   : 1178891
Number of Cells Dropped in High-Low Direction    : 0
Traffic Type (Low-High)                          : CBR
Early Packet Discard (Low-High)                  : DISABLED
Cell Loss Ratio (Low-High)                       : 0
Cumulative Cell Delay variation(Low-High)        : 0
Max Cell Transfer Delay(Low-High)                : 0
Cumulative Cell Transfer Delay(Low-High)         : 0
Number of Cells Received in Low-High Direction   : 1178900
Number of Cells Dropped in Low-High Direction    : 0

Total number of PVCs = 1
```

PVPById

Use PVPById to manage a PVP by its cross-connect ID.

Operators

`activate, add, deactivate, delete, show`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[CrossConnectId]	Cross-connect ID of the PVP (as assigned by switch software). Use the **`show pvp all`** command to get a list of cross-connect IDs.	Positive integer	No default
[CrossConnectSubId]	Cross-connect sub-ID of the PVP (as assigned by switch software).	Positive integer	No default

Descriptions

Operator	Parameters / Permissions	Description
`activate pvcbyid`	`[CrossConnectId]` **`<crossconnid>`** `[CrossConnectSubId]` **`<crossconnectsubid>`** Administrator	Activates the PVP. Administrative status is Up.
`deactivate pvcbyid`	`[CrossConnectId]` **`<crossconnid>`** `[CrossConnectSubId]` **`<crossconnectsubid>`** Administrator	Deactivates the PVP. Administrative status is Down.
`delete pvcbyid`	`[CrossConnectId]` **`<crossconnid>`** `[CrossConnectSubId]` **`<crossconnectsubid>`** Administrator	Deletes the PVP.

Examples

```
switch_prompt # activate pvpbyid
CrossConnId()                          : 2
CrossConnSubId()                       : 36

switch_prompt #

switch_prompt # deactivate pvpbyid
CrossConnId()                         : 2
CrossConnSubId()                      : 36

switch_prompt #

switch_prompt # delete pvpbyid
CrossConnectId()                      : 1
CrossConnectSubId()                   : 36

switch_prompt #
```

Reboot

Use Reboot to reboot the switch.

Operators

reboot

Parameters

This attribute has no parameters. Just enter **reboot** at the switch prompt and the switch reboots.

Descriptions

Operator	Parameters/Permissions	Description
reboot	[Reboot] <**reboot**> Administrator	Reboots the switch. Note that certain switch conditions are persistent on reboot. For example, if the LECS is stopped before the reboot, it will also be stopped after the switch comes back up. Also be aware that if you enter **reboot** from a telnet session, it breaks any connection you have with the switch. Press any key during the first seven seconds after entering this command as a way to avoid the full switch diagnostic session. By pressing any key and then typing **go**, the switch will conduct a basic diagnostic session.

Example

```
switch_prompt # reboot

Rebooting will temporarily disrupt all connections through the switch
Are you sure this is what you want to do?

Confirm(y/n)?:y

switch_prompt #
```

RedundancyConfigBackup

Use RedundancyConfigBackup to copy the current configuration of the master TSM/CPU module to the slave TSM/CPU module's backup configuration file. If the master module fails, the slave becomes the master and automatically configures itself with information from this file. Use RedundancyInfo to set the name and location of the slave TSM/CPU backup configuration file.

Note If you use the same configuration file for the slave and master modules, you can use the **`backup switch`** command to copy the current master configuration to the slave backup configuration file. If the name or location of the files is different, however, you must use **`execute redundancyconfigbackup`** to synchronize the current master configuration with the slave backup configuration file.

Operators

`execute`

Parameters

This attribute has no parameters. Just enter **`execute redundancyconfigbackup`** at the switch prompt.

Descriptions

Operator	Parameters/Permissions	Description
`execute redundancyconfigbackup`	Administrator	Backs up the slave TSM/CPU configuration file.

Examples

```
switch_prompt # execute redundancyconfigbackup

Backup successful

switch_prompt #
```

RedundancyInfo

Use RedundancyInfo to set or display the location of the backup configuration file for the redundant (slave) TSM/CPU module. If the master TSM/CPU module fails, the slave module becomes the master and automatically configures itself with information from this file.

Note Typically, you use the same configuration file for the slave and master modules. If you do, the **`backup switch`** command keeps the slave configuration synchronized with the master's current configuration. If you do not (the file has a different name or location), use RedundancyConfigBackup to synchronize the slave configuration with the master's current configuration.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[UpdateConfig]	Sets/unsets a flag to update configuration.	Y (Yes), N (No)	N
[HostIP]	IP address of server on which backup configuration file resides.	Dot decimal/ 7-15 characters	Last IP address used
[PathFileName]	Full pathname of backup file.	256 characters	Last pathname used

Output Parameter	Description
[UpdateConfig]	Sets/unsets a flag to update configuration.
[HostIP]	IP address of server on which backup configuration file resides.
[PathFileName]	Full pathname of backup file.

Descriptions

Operator	Parameters/Permissions	Description
`set redundancyinfo`	`[UpdateConfig]` **`<updateconfig>`** `[HostIP]` **`<hostip>`** `[PathFileName]` **`<pathfilename>`** Administrator	Sets location of the slave TSM/CPU configuration file. Whatever file you choose as the slave TSM/CPU configuration file, the file must exist on the TFTP server and must be located within the **`/tftpboot`** directory.
`show redundancyinfo`	Administrator	Displays the location of the slave TSM/CPU configuration file.

Examples

```
switch_prompt # set redundancyinfo
UpdateConfig(N)                          :
HostIP(206.61.237.40)                    : 206.61.237.16
PathFileName(backup/smart6500.ztr)       : backup/slave.ztr

switch_prompt #

switch_prompt # show redundancyinfo
UpdateConfig            : N
HostIP                  : 206.61.237.16
PathFileName            : backup/slave.ztr

switch_prompt #
```

Route

Use Route to administer IP route management to an ATM client through an Ethernet network. It allows network management software to communicate across a network of switches.

Operators

`add, delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[DestNetIP]	IP address of a remote network.	Dot decimal/ 7-15 characters	No default
[GatewayIP]	IP address for a gateway to the remote network.	Dot decimal/ 7-15 characters	No default

Output Parameter	Description
[Destination]	IP address of a remote network. (Same as the [DestNetIP] input parameter.)
[Gateway]	IP address for a gateway to the remote network. (Same as the [GatewayIP] input parameter.)
[Flags]	The flags field is a bitmask of different options: • 0x1 – Route is usable (“up”) • 0x2 – Destination address is a gateway0x4 – Host-specific routing entry • 0x10 – Created dynamically by ICMP redirect • 0x20 – Modified dynamically by ICMP redirect
[Refcnt]	Internal/debugging information.
[Use]	Number of times this route has been used to send a packet.
[Interface]	Interface used for forwarding packets on this route.

Descriptions

Operator	Parameters/Permissions	Description
add route	[DestNetIP] <**destnetip**> [GatewayIP] <**gatewayip**> Administrator	Creates an IP route to an ATM client when it is not directly connected to the NMS (network management system). You must assign both the destination IP address and the gateway IP address to reach the ATM client, and these addresses must already exist.
delete route	[DestNetIP] <**destnetip**> [GatewayIP] <**gatewayip**> Administrator	Removes an IP route from the switch configuration when it is not directly connected to the NMS.
show route	All	Displays IP routes used by the switch. The flag numbers shown in the flags column relate to the hexadecimal figures listed in the Output Parameter table above. Whatever number is shown defines what flags are active. For example, 1 equals flag 0x1; 5 equals flag 0x1 + flag 0x4; 7 equals flag 0x1 + flag 0x2 + flag 0x4 and so on.

Examples

```
switch_prompt # add route
DestNetIP()                              : 204.95.77.187
GatewayIP()                              : 204.95.77.186
switch_prompt #

switch_prompt # show route

ROUTE NET TABLE
destination      gateway          flags  Refcnt  Use           Interface
-------------------------------------------------------------------------
90.1.1.0         90.1.1.186       1      0       6508          zn1
204.95.77.0      204.95.77.186    1      3       6312          ei0
-------------------------------------------------------------------------
ROUTE HOST TABLE
destination      gateway          flags  Refcnt  Use           Interface
-------------------------------------------------------------------------
127.0.0.1        127.0.0.1        5      0       0             lo0
204.95.77.187    204.95.77.186    5      0       0             ei0
-------------------------------------------------------------------------
switch_prompt #

switch_prompt # delete route
DestNetIP()                              : 204.95.77.187
GatewayIP()                              : 204.95.77.186
switch_prompt #
```

Rows

Use Rows to alter the number of rows per page on the console display.

Operators

`modify`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[Rows]	Number of rows per page (0 turns off pagination).	0 to 999	18

Descriptions

Operator	Parameters/Permissions	Description
`modify rows`	`[rows] <`**`number`**`>` Administrator	Sets the number of rows per page on the console display (by telling the switch how many lines your console supports). If you do not want screen breaks in the output, set the number of rows to "0."

Examples

```
switch_prompt # modify rows
Rows(18): 25
There are now 25 rows per page
switch_prompt #
```

SARStat

Use SARStat (segmentation and reassembly statistics) to view statistics from the SAR on the CPU port. This is useful for debugging hardware problems.

Operator

show

Parameters

This attribute has no input parameters. Just enter **show sarstat** at the switch prompt.

Output Parameter	Description
[Rcv Pkts]	Number of packets received since last up-time or clear.
[RCV Byts]	Number of bytes received since last up-time or clear.
[Raw Cell]	Number of raw cells received.
[Buf UF]	Number of underflow buffers received since last up-time or clear.
[FIFO OR]	Number of first in, first out overruns received.
[Max Len]	Maximum length of packet.
[Len Err]	Number of packet-length errors received.
[Crc Err]	Number of packet-length errors received.
[U Abrts]	Number of user aborts received since last up-time or clear.
[T1 Err]	Number of T1 errors received since last up-time or clear.
[Chnl DVT]	Number of channel DVT (delay variation tolerance) indicators since last up-time or clear.
[spur Int]	Number of spurious indicators since last up-time or clear.
[Ttl Err]	Total errors received since last up-time or clear.
[ISR Int]	Total interrupts received.
[RQU Int]	Receive queue underrun indicator since last up-time or clear.

Output Parameter	Description
[RQA Int]	Receive queue alert indicator since last up-time or clear.
[MM Int]	Mailbox modified indicator.
[MF Int]	Mailbox full indicator.
[SBE Int]	System bus error indicator since last up-time or clear.
[SPE Int]	System parity error indicator since last up-time or clear.
[CPE Int]	Number of control monitor parity error indicators.
[PI Int]	Physical interface indicator.
[RD Int]	Receive deactivated indicator since last up-time or clear.
[RCR Int]	Raw cell received indicator.
[Pkts Qd]	Number of packets queued.
[Pkts Cmp]	Number of packets completed.
[Byts Cmp]	Number of bytes completed since last up-time or clear.
[Pkts Drp]	Number of packets dropped.

Descriptions

Operator	Parameters/Permissions	Description
`show sarstat`	Administrator	Displays all levels of statistics for the SAR. AAL (ATM adaptation layer) commands act on the SAR of VCs (virtual circuits) and VC statistics.

Examples

```
switch_prompt # show sarstat

Receive Statistics
Rcv Pkts:         6 Rcv Byts:       648 Raw Cell:         0 Buf UF  :         0
FIFO OR :         0 Max Len :         0 Len Err :         0 Crc Err :         7
U Abrts :         0 T1 Err  :         0 Chnl DVT:        26 spur Int:         0
Ttal Err:         7 ISR  Int:        39 RQU  Int:         0 RQA  Int:         0
MM   Int:        39 MF   Int:         0 SBE  Int:         0 SPE  Int:         0
CPE  Int:         0 PI   Int:         0 RD   Int:         0 RCR  Int:         0

Transmit Statistics
Pkts Qd :        20 Pkts Cmp:        20 Byts Cmp:     1712  Pkts Drp:         0
switch_prompt #
```

ServiceRegistry

Use ServiceRegistry to manage entries in the service registry MIB.

Note You can hot-swap TSMs. Hot-swapping is replacing a module when the chassis is powered up. If you replace a TSM with another TSM of the same type (same I/O ports), existing configuration of port parameters is not affected. This includes parameters set using any of the following attributes: ATMRoute, CACServiceClassBw, IlmiConfig, NetPrefix, Port, PortConfig, PVC, PVP, ServiceRegistry, SigTimer, SigStatistics, SSCOPConfig, and SSCOPStatistics. If you replace a TSM with another TSM of a different type, existing configuration of port parameters is deleted. The deletion occurs when the new module is plugged into the chassis backplane.

Operators

`add, delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4 or All	All
[ServiceType]	Type of service (ANS or LECS)	ANS, LECS	LECS
[AddressIndex]	Index identifying two services registered for the same port and having the same service type.	Positive integer	No default
[AtmAddress]	ATM address of the server.		No default

Note If you hot-swap a TSM with a TSM of a different type (different I/O ports), service registry information associated with ports on the original TSM is deleted. Before you insert a replacement TSM, you can display existing service registry information using the **`show`** operator with the **`/o`** option (for example: **`show serviceregistry /o`**).

Output Parameter	Description
[Port]	Port number on the switch. (Same as the [PortNumber] input parameter.)
[Type]	Type of service. Possible values are: ANS or LECS.
[Index]	Index identifying two services registered for the same port and having the same service type. (Same as the [AddressIndex] input parameter.)
[AtmAddress]	ATM address of the server.

Descriptions

Operator	Parameters / Permissions	Description
add serviceregistry	[PortNumber] **<portnumber>** [ServiceType] **<servicetype>** [AddressIndex] **<addressindex>** [AtmAddress] **<atmaddress>** Administrator	Adds a service to service registry MIB.
delete serviceregistry	[PortNumber] **<portnumber>** [ServiceType] **<servicetype>** [AddressIndex] **<addressindex>** Administrator	Deletes a service from service registry MIB.
show serviceregistry	[PortNumber] **<portnumber>** Administrator	Displays all entries in the service registry MIB.

Examples

```
switch_prompt # add serviceregistry
PortNumber(ALL)    : A1
ServiceType(LECS)  :
AddressIndex()     : 1
AtmAddress()       : 39:00:00:00:00:00:00:00:00:00:14:1B:00:0020:D4:14:1C:00:01
switch_prompt #

switch_prompt # delete serviceregistry
PortNumber(ALL)    :
ServiceType(LECS)  :
AddressIndex()     : 3
switch_prompt #

switch_prompt # show serviceregistry
PortNumber(ALL)    :

Port   Type   Index  AtmAddress
================================================================================
A1     LECS    1     39:00:00:00:00:00:00:00:00:00:14:1B:00:0020:D4:14:1C:00:01
A2     LECS    2     39:00:00:00:00:00:00:00:00:00:14:1B:00:0020:D4:14:1A:00:01
ALL    LECS    1     39:00:00:00:00:00:00:00:00:00:14:1B:00:0020:D4:14:1B:00:01

switch_prompt #
```

Shutdown

Use Shutdown to shut down the switch to a state where it can be powered off. Shutdown stops all logging and synchronizes the file system. You must enter **shutdown** before turning off the switch.

Operator

shutdown

Parameters

This attribute has no parameters. Just enter **shutdown** at the switch prompt.

Descriptions

Operator	Parameters/Permissions	Descriptions
shutdown	Administrator	After issuing this command, you are prompted for confirmation (reply **y** to confirm). After the switch is shutdown, you can safely power off or reset the switch. Be sure not to confuse this attribute with Exit. Use **exit** simply to end a console session.

Example

```
switch_prompt # shutdown
Confirm(y/n)?: y
switch_prompt #
You can switch off the system now
```

SigStatistics

Use SigStatistics to display signaling statistics of a port.

Note You can hot-swap TSMs. Hot-swapping is replacing a module when the chassis is powered up. If you replace a TSM with another TSM of the same type (same I/O ports), existing configuration of port parameters is not affected. This includes parameters set using any of the following attributes: ATMRoute, CACServiceClassBw, IlmiConfig, NetPrefix, Port, PortConfig, PVC, PVP, ServiceRegistry, SigTimer, SigStatistics, SSCOPConfig, and SSCOPStatistics. If you replace a TSM with another TSM of a different type, existing configuration of port parameters is deleted. The deletion occurs when the new module is plugged into the chassis backplane.

Operator

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), or All	All

Output Parameter	Description
[Port#]	Port number on the switch. (Same as the [PortNumber] input parameter.)
[Detect Setup Attempts]	Number of set-up messages received.
[Emit Setup Attempts]	Number of set-up messages transmitted.
[Detect Unavailable Routes]	Number of SVC calls rejected by this switch because of unavailable IISP or UNI routes generated on other switches.
[Emit Unavailable Routes]	Number of SVC calls rejected by this switch because of unavailable IISP or UNI routes generated on this switch.

Output Parameter	Description
[Detect Unavailable Resources]	Number of calls rejected because of unavailable resources on other switches.
[Emit Unavailable Resources]	Number of calls rejected because of unavailable resources on this switch.
[Detect Called Party Events]	Number of calls other switches reject (such as incorrect or invalid called party number or called party busy signal).
[Emit Called Party Events]	Number of calls this switch rejected (such as incorrect or invalid called party number or called party busy signal).
[Detect Signaling Message Errors]	Number of signaling message errors for other switches (such as invalid information elements (IE) or missing mandatory elements in the IEs).
[Emit Signaling Message Errors]	Number of signaling message errors for this switch (such as invalid information elements (IE) or missing mandatory elements in the IEs).
[Detect Timer Expirations]	Number of calls terminated by other switches due to timer expirations.
[Emit Timer Expirations]	Number of calls terminated by this switch due to timer expirations.
[Detect Restarts]	Number of requests (by the user) on other switches to release all resources associated with the circuit controlled by signaling.
[Emit Restarts]	Number of requests (by the user) on this switch to release all resources associated with the circuit controlled by signaling.
[In Call Establishments]	Number of successful incoming call set-ups.
[Out Call Establishments]	Number of successful outgoing call set-ups.

Description

Operator	Parameters / Permissions	Description
`show sigstatistics`	[PortNumber] <**portnumber**> All	Displays signaling statistics.

Examples

```
switch_prompt # show sigstatistics
Executing this command : show SigStatistics
PortNumber(ALL)                      : 1a1

================================================
             Signalling Statistics
================================================
Port#                              :  1A1
Detect setup attempts              :  0
Emitt  Setup Attempts              :  358
Detect Unavailable Routes          :  0
Emitt  Unavailable Routes          :  0
Detect Unavailable Resources       :  0
Emitt Unavailable Resources        :  0
Detect Calledparty Events          :  6
Emitt Calledparty Events           :  206
Detect Signalling Message Errors   :  0
Emitt Signalling Message Errors    :  0
Detect Callingparty Events         :  0
Emitt Callingparty Events          :  0
Detect Timer Expirations           :  0
Emitt Timer Expirations            :  0
Detect Restarts                    :  1
Emitt Restarts                     :  0
In Call Establishments             :  0
Out Call Establishments            :  10

switch_prompt #
```

SigTimer

Use SigTimer to set or display signaling timer values for a port

Note You can hot-swap TSMs. Hot-swapping is replacing a module when the chassis is powered up. If you replace a TSM with another TSM of the same type (same I/O ports), existing configuration of port parameters is not affected. This includes parameters set using any of the following attributes: ATMRoute, CACServiceClassBw, IlmiConfig, NetPrefix, Port, PortConfig, PVC, PVP, ServiceRegistry, SigTimer, SigStatistics, SSCOPConfig, and SSCOPStatistics. If you replace a TSM with another TSM of a different type, existing configuration of port parameters is deleted. The deletion occurs when the new module is plugged into the chassis backplane.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), or All	All
[TimerId]	Timer name.	Possible values are: T301,T303, T306,T308, T309, T310, T313, T316, T317, T322, T331, T333, T397,T398, T399.	T303
[Interval]	Timer value in milliseconds.	Zero or positive integer	0
[Retries]	Number of times the timer has to be restarted.	Zero or positive integer	1

Output Parameter	Description
[phy_port_id]	Port number on the switch. (Same as the [PortNumber] input parameter.)
[duration]	Timer value in milleseconds. (Same as the [Interval] input parameter.)
[retries]	Number of times the timer has to be restarted. (Same as the [Retries] input parameter.)

Descriptions

Operator	Parameters / Permissions	Description
modify sigtimer	[PortNumber] **<portnumber>** [TimerID] **<timerid>** [Interval] **<interval>** [Retries] **<retries>** Administrator	Sets signaling timer values.
show sigtimer	All	Displays signaling timer values.

Examples

```
switch_prompt # show sigtimer

PortNumber()             : 1a1

==========================================

 : All timer values in Milliseconds
phy_port_id               : 1A1
T301 duration             : 180000
T303 duration             : 4000
T303 retries              : 1
T306 duration             : 30000
T308 duration             : 30000
T308 retries              : 1
T309 duration             : 10000
T310 duration             : 10000
T313 duration             : 30000
T316 duration             : 120000
T316 retries              : 1
T317 duration             : 60000
T322 duration             : 4000
T322 retries              : 1
T331 duration             : 60000
T331 retries              : 1
T333 duration             : 10000
T397 duration             : 180000
T398 duration             : 4000
T399 duration             : 14000

switch_prompt #
```

SlotConfig

Use SlotConfig to display configuration of slots in the switch chassis (to see which slots are occupied by TSM or CSM modules). You also can get specific information about each module.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[Slot]	Slot number in the switch chassis.	1-10 or All	All

Output Parameter	Description
[Slot ID]	Slot number in the switch chassis. (Same as the [Slot] input parameter.)
[Board]	Type of module in the slot (TSM or CSM).
[IO Modules]	Number of IO modules (applies to TSM modules only).
If you give a specific [Slot], the following additional fields are displayed.	
[Board ID]	ID number of the board.
[Board Rev]	Revision number of the board.

Descriptions

Operator	Parameters/Permissions	Description
`show slotconfig`	`[Slot]` **`<slot>`** Administrator	Displays configuration of slots in the switch chassis.

Examples

```
switch_prompt # show slotconfig
Slot(ALL)                                   :
Slot ID    Board      IO Modules

================================================================================
7          TSM        2
9          CSM        NA

switch_prompt # show slotconfig
Slot(ALL)                                   : 7
Slot 7

================================================================================
Slot Number:                               : 7
Installed Board:                           : TSM
Board ID                                   : 0
Board Rev                                  : 1
IO Boards Installed                        : 2
IO Board                                   : NONE
IO Board                                   : NONE

switch_prompt #
```

SSCOPConfig

Use SSCOPConfig to set or display switch Service-Specific Connection-Oriented Protocol parameters. SSCOP parameters control how the switch interoperates with other switches.

Note You can hot-swap TSMs. Hot-swapping is replacing a module when the chassis is powered up. If you replace a TSM with another TSM of the same type (same I/O ports), existing configuration of port parameters is not affected. This includes parameters set using any of the following attributes: ATMRoute, CACServiceClassBw, IlmiConfig, NetPrefix, Port, PortConfig, PVC, PVP, ServiceRegistry, SigTimer, SigStatistics, SSCOPConfig, and SSCOPStatistics. If you replace a TSM with another TSM of a different type, existing configuration of port parameters is deleted. The deletion occurs when the new module is plugged into the chassis backplane.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), or All	
[MaxPD]	Number of SD PDUs after which a Poll PDU is generated.	5-20	20
[MaxCC]	Number of BEGIN PDUs sent during line establishment.	4-10	4
[PollTime]	Time (in milliseconds) between generation of Poll PDUs.	100-1000	750
[KeepAliveTime]	Rate of PollStat exchange (in milliseconds) in the absence of SD PDU traffic.	1000-2000	2000

Input Parameter	Description	Value/Field Size	Default
[NoResponseTime]	Maximum time (in milliseconds) within which a Poll must be acknowledged by a Stat PDU.	10000-15000	7000
[CCTime]	Rate at which BEGIN and END PDUs are generated during link establishment of release.	1000-2000	1000
[RxWindowSz]	Receive window size when SSCOP stack is initialized.	32-256	64

Output Parameter	Description
[Port#]	Port number on the switch.
[MaxPD]	Number of SD PDUs after which a Poll PDU is generated.
[MaxCC]	Number of BEGIN PDUs sent during line establishment.
[PollTm]	Time (in milliseconds) between generation of Poll PDUs. (Same as the [PollTime] input parameter.)
[KpAliveTm]	Rate of PollStat exchange (in milliseconds) in the absence of SD PDU traffic. (Same as the [KeepAliveTime] input parameter.)
[NoRespTm]	Maximum time (in milliseconds) within which a Poll must be acknowledged by a Stat PDU. (Same as the [NoResponseTime] input parameter.)
[CCTm]	Rate at which BEGIN and END PDUs are generated during link establishment of release. (Same as the [CCTime] input parameter.)
[RxWindowSz]	Receive window size when SSCOP stack is initialized.

Descriptions

Operator	Parameters / Permissions	Description
modify sscop	[PortNumber] **<portnumber>** [MaxPD] **<maxpd>** [MaxCC] **<maxcc>** [PollTime] **<polltime>** [KeepTimeAlive] **<keeptimealive>** [NoResponseTime] **<noresponsetime>** [CCTime] **<cctime>** [RxWindowSz] **<rxwindowsize>** Administrator	Sets switch SSCOP parameters.
show sscopconfig	All	Displays switch SSCOP parameters.

Examples

```
switch_prompt # modify sscopconfig

PortID (1A1)            : 1B1
MaxPD(10)               : 15
MaxCC(4)                : 5
PollTime(200)           : 250
KeepAliveTime(1000)     : 1500
NoResponseTime(10000)   : 15000
CCTime(1000)            : 1500
RxWindowSz(256)         : 256

switch_prompt #

switch_prompt # show sscopconfig
PortNumber(ALL)        : 1a1

Port#   MaxPD  MaxCC   PollTm  KpAliveTm  NoRespTm CCTm  RxWindowSz
=================================================================
              (Timer value in MilliSecs)
=================================================================

1A1      30     5       500     2000       7000     1000    25

switch_prompt #
```

SSCOPStatistics

Use SSCOPStatistics to display SSCOP statistics of a port or all ports.

Note You can hot-swap TSMs. Hot-swapping is replacing a module when the chassis is powered up. If you replace a TSM with another TSM of the same type (same I/O ports), existing configuration of port parameters is not affected. This includes parameters set using any of the following attributes: ATMRoute, CACServiceClassBw, IlmiConfig, NetPrefix, Port, PortConfig, PVC, PVP, ServiceRegistry, SigTimer, SigStatistics, SSCOPConfig, and SSCOPStatistics. If you replace a TSM with another TSM of a different type, existing configuration of port parameters is deleted. The deletion occurs when the new module is plugged into the chassis backplane.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), or All	All

Output Parameter	Description
[Port#]	Port number on the switch.
[Num BEGIN Transmitted]	Number of BEGIN PDUs transmitted.
[Num BEGIN Received]	Number of BEGIN PDUs received.
[Num BEGIN Retransmit Transmitted]	Number of BEGIN retransmit PDUs transmitted.
[Num BEGIN Retransmit Received]	Number of BEGIN retransmit PDUs received.
[Num BEGIN ACK Transmitted]	Number of BEGINACK PDUs transmitted.

Output Parameter	Description
[Num BEGIN ACK Received]	Number of BEGINACK PDUs received.
[Num BEGIN REJ Transmitted]	Number of BEGINREJECT PDUs transmitted.
[Num BEGIN REJ Received]	Number of BEGINREJECT PDUs received.
[Num RESYNC Transmitted]	Number of RESYNC PDUs transmitted.
[Num RESYNC Received]	Number of RESYNC PDUs received.
[Num RESYNC Retransmit Transmitted]	Number of RESYNC retransmit PDUs transmitted.
[Num RESYNC Retransmit Received]	Number of RESYNC retransmit PDUs received.
[Num RESYNC Ack Transmitted]	Number of RESYNC ack PDUs transmitted.
[Num RESYNC Ack Received]	Number of RESYNC ack PDUs received.
[Num ERRREC Transmitted]	Number of ERROR RECOVERY PDUs transmitted.
[Num ERRREC Received]	Number of ERROR RECOVERY PDUs received.
[Num ERRREC Retransmit Transmitted]	Number of ERROR RECOVERY retransmit PDUs transmitted.
[Num ERRREC Retransmit Received]	Number of ERROR RECOVERY retransmit PDUs received.
[Num ERRREC Ack Transmitted]	Number of ERROR RECOVERY ACK PDUs transmitted
[Num ERRREC Ack Received]	Number of ERROR RECOVERY ACK PDUs transmitted.
[Num END Transmitted]	Number of END PDUs transmitted.
[Num END Received]	Number of END PDUs received.
[Num END Retransmit Transmitted]	Number of END retransmit PDUs transmitted.
[Num END Retransmit Received]	Number of END retransmit PDUs received.
[Num END Ack Transmitted]	Number of END ACK PDUs transmitted.
[Num END Ack Received]	Number of END ACK PDUs received.
[Num POLL Transmitted]	Number of POLL PDUs transmitted.

Output Parameter	Description
[Num POLL Received]	Number of POLL PDUs received.
[Num STAT Transmitted]	Number of STAT PDUs transmitted.
[Num STAT Received]	Number of STAT PDUs received.
[Num USTAT Transmitted]	Number of USTAT PDUs transmitted.
[Num USTAT Received]	Number of USTAT PDUs received.
[Num SD Transmitted]	Number of SD PDUs transmitted.
[Num SD Received]	Number of SD PDUs received.
[Num SD Retransmitted]	Number of SD PDUs retransmitted.
[Num SD Acknowledged]	Number of SD PDUs acknowledged.
[Num SD Delivered]	Number of SD PDUs delivered.
[Num SD Duplicated]	Number of SD PDUs duplicated.
[NumS D Retransmission Req Sent]	Number of SD retransmission requests sent.
[Num SD Retransmisson Req Rcvd]	Number of SD retransmission request received.
[Num Times TX Window Empty]	Number of times transmit window become empty.
[Num MAA Errors]	Number of MAA errors occurred.
[Num Times NORESPONSE Expired]	Number of times NORESPONSE timer expired.
[Num Max Times TCC Timer Expired]	Maximum number of times timer TCC expired while waiting for BEGIN PDU.
[Num Invalid PDUs Received]	Number of invalid PDUs received.
[Num Error PDUs Received]	Number of error PDUs received.

Description

Operator	Parameters / Permissions	Description
show sscopstatistics	[PortNumber] **<portnumber>** All	Displays SSCOP statistics.

Examples

```
switch_prompt # show sscopstatistics
PortID(ALL)                              : 1a2

 ================================================
                SSCOP Statistics
 ================================================
Port#                                    : 1A2
No of BEGIN transmitted                  : 1
No of BEGIN received                     : 0
No of BEGIN retransmit transmitted       : 0
No of BEGIN retransmit received          : 0
No of BEGINACK  transmitted              : 0
No of BEGINACK  received                 : 1
No of BEGINREJ transmitted               : 0
No of BEGINREJ received                  : 0
No of RESYNC transmitted                 : 0
No of RESYNC received                    : 0
No of RESYNC retransmit transmitted      : 0
No of RESYNC retransmit received         : 0
No of RESYNC ack transmitted             : 0
No of RESYNC ack received                : 0
No of ERRREC transmitted                 : 0
No of ERRREC received                    : 0
No of ERRREC retransmit transmitted      : 0
No of ERRREC retransmit received         : 0
No of ERRREC ack transmitted             : 0
No of ERRREC ack received                : 0
No of END transmitted                    : 0
No of END received                       : 0
No of END retransmit transmitted         : 0
No of END retransmit received            : 0
No of END ack transmitted                : 0
No of END ack received                   : 0
No of POLL transmitted                   : 17
No of POLL received                      : 17
No of STAT transmitted                   : 17
No of STAT received                      : 17
No of USTAT transmitted                  : 0
No of USTAT received                     : 0
No of SD transmitted                     : 0
No of SD received                        : 0
No of SD retransmitted                   : 0
No of SD acknowledged                    : 0
No of SD delivered                       : 0
No of SD duplicated                      : 0
No of SD retransmission req sent         : 0
No of SD retransmission req rcvd         : 0
No of times TX window empty              : 0
No of MAA errors                         : 0
No of times NORESPONSE expired           : 0
No of max times TCC timer expired        : 0
No of Invalid PDUs received              : 0
No of Error PDUs received                : 0

switch_prompt #
```

SVC

Use SVC to display SVCs on a port or all ports.

Operator

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[PortNumber]	Port number on the switch.	1A1 to 8B4 (for physical ports), 1A1.*n* to 8B4.*n* (for virtual ports), or All	All

Output Parameter	Description
[Conn Id]	Identifier unique for each connection.
[Low Port]	Port receiving the backward flow of the high/low pair.
[Low VPI]	Low VPI (virtual path identifier) number.
[LowVCI]	Low VCI (virtual circuit identifier) number.
[Low Type]	Low port connection type (PMP or PTP).
[High Port]	Port sending the forward flow of the high/low pair.
[High VPI]	High VPI (virtual path identifier) number.
[High VCI]	High VCI (virtual circuit identifier) number.
[High Type]	High port connection type (PMP or PTP).
[Creation Time]	Time when the SVC was established (with respect to the boot time on the switch). Displayed in Hour:Minute:Seconds format.

Description

Operator	Parameters / Permissions	Description
show svc	[PortNumber] **<portnumber>** Administrator	Displays SVC(s) for s apecified port

Example

```
switch_prompt  # show svc
PortNumber(ALL)             : 1a1

=====================================================================
 Conn  |      Low            |       High          |  CreationTime
 Id    | Port  Vpi Vci  Type | Port  Vpi  Vci Type |  (Hr:Min:Sec)
=====================================================================
695      A1   0    32   PTP    A3    0    32  PTP      0: 5:20
696      A1   0    33   PTP    A3    0    33  PTP      0: 5:20
697      A1   0    34   PTP    A3    0    34  PTP      0: 5:20
698      A1   0    35   PTP    A3    0    35  PTP      0: 5:20
699      A1   0    36   PTP    A3    0    36  PTP      0: 5:20
700      A1   0    37   PTP    A3    0    37  PTP      0: 5:20
701      A1   0    38   PTP    A3    0    38  PTP      0: 5:20
702      A1   0    39   PTP    A3    0    39  PTP      0: 5:20
703      A1   0    40   PTP    A3    0    40  PTP      0: 5:20
704      A1   0    41   PTP    A3    0    41  PTP      0: 5:20

switch_prompt #
```

SVCById

Use SVCById to display a single or all SVCs in normal or detail mode.

Operator

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[CrossConn]	Identifier unique for each connection.The identifier is displayed by the **show SVC** command.		No default

In the Output Parameter table below, (**</d>**) indicates parameters that are available only through the **show svdbyid /d** (detailed) command

Output Parameter	Description
[Conn Id] and [Cross Connect Id]	Identifier for each unique connection. (Same as the [CrossConn] input parameter.)
[Low Port]	Port receiving the backward flow of the high/low pair.
[Low VPI]	Low VPI (virtual path identifier) number.
[Low VCI]	Low VCI (virtual circuit identifier) number.
[Low Cast Type]	Low port connection type (PMP or PTP).
[High Port]	Port sending the forward flow of the high/low pair.
[High VPI]	High VPI (virtual path identifier) number.
[High VCI]	High VCI (virtual circuit identifier) number.
[High Cast Type]	High port connection type (PMP or PTP).

Output Parameter	Description
[Creation Time]	Time when the SVC was established (with respect to boot time of the switch). Displayed in Hour:Minute:Seconds format.
[Admin Status] **</d>**	Administrative status (UP or DOWN).
[Operation Status] **</d>**	Operational status (UP or DOWN).
[Early Packet Discard] **</d>**	Early packet discard for the cross connect as calculated by CAC.
[High Port] **</d>**	Port receiving the forward traffic flow of the high/low pair.
[Cell Loss Ratio] **</d>**	Cell loss ratio on this VC.
[Cumulative Cell Delay Variation] **</d>**	Cumulative cell delay variation on this VC.
[Max Cell Transfer Delay] **</d>**	Maximum cell transfer delay on this VC.
[Cumulative Cell Transfe rDelay] **</d>**	Cumulative cell transfer delay on this VC.
[Number of Cells Received in Fwd Direction] **</d>**	Number of cells received in the forward direction.
[Number of Cells Received in Bkw Direction] **</d>**	Number of cells received in the backward direction.
[Number of Cells Dropped in Fwd Direction] **</d>**	Number of cells dropped in the forward direction.
[Number of Cells Dropped in Bkw Direction] **</d>**	Number of cells dropped in the backward direction.
[Number of Epd Packets Dropped in Fwd Direction] **</d>**	Number of early packet discard packets dropped in the forward direction.
[Number of Epd Packets Dropped in Bkw Direction] **</d>**	Number of early packet discard packets dropped in the backward direction.

Descriptions

Operator	Parameters / Permissions	Description
show svcbyid	[ConnID] **<connectionid>** Administrator	Displays SVC(s) by connection ID.

Examples

```
switch_prompt #    show  svcbyid
CrossConn                   : 704

=====================================================================
 Conn  |        Low          |         High        |   CreationTime
 Id    | Port  Vpi Vci  Type | Port  Vpi Vci  Type |   (Hr:Min:Sec)
=====================================================================

704     1A1     0   41   PTP    1A3    0   41   PTP       0: 5:20

switch_prompt #   show svcbyid    /d
CrossConnectNum(ALL)       : 704
=========================================================
Cross Connect Id                                 : 704
Low Port                                         : 1A1
Low VPI                                          : 0
Low VCI                                          : 41
Low Cast Type                                    : PTP
High Port                                        : 1A3
High VPI                                         : 0
High VCI                                         : 41
High Cast Type                                   : PTP
Admin Status                                     : UP
Operation Status                                 : UP
Creation Time (Hr:Min:Sec:MillSec)               : 0:5:20:0
Traffic Type (Forward)                           : -
Early Packet Discard (Forward)                   : DISABLED
Cell Loss Ratio (Forward)                        : 0
Cumulative Cell Delay Variation (Forward)        : 0
Max Cell Transfer Delay (Forward)                : 0
Cumulative Cell Transfer Delay (Forward)         : 0
Number of Cells Received in the Fwd Direction    : 0
Number of Cells Dropped in the Fwd Direction     : 0
Number of Epd Packets Dropped in the Fwd Direction : 0
Traffic Type (Backward)                          : -
Early Packet Discard (Backward)                  : DISABLED
Cell Loss Ratio (Backward)                       : 0
Cumulative Cell Delay Variation (Backward)       : 0
Max Cell Transfer Delay (Backward)               : 0
Cumulative Cell Transfer Delay (Backward)        : 0
Number of Cells Received in the Bkw Direction    : 0
Number of Cells Dropped in the Bkw Direction     : 0
Number of Epd Packets Dropped in the Bkw Direction : 0

switch_prompt #
```

Switch

Use Switch to backup or restore the switch configuration file.

Operators

`backup, restore`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[ServerIP]	IP address of the backup server.	Dot decimal/ 7-15 characters	No default
[Path]	Pathname of the backup directory.	256 characters	backup: `public/Smart6500.ztr` (initially, then last path used) restore**:** `public/Smart6500.ztr` (initially, then last path used)

Descriptions

Operator	Parameters/Permissions	Description
backup switch	[ServerIP] <serverip> [Path] </**back_dir/backup_file**> Administrator	Copies the current configuration of the master TSM/CPU module to a backup file at an end station. This command backs up the switch configuration only. It does not back up the load image. It prompts you for the IP address of the workstation to which you are saving the switch configuration as well as the backup path and filename. The end station must have TFTP server software running in order to transfer files from the switch. If you have previously entered **backup switch**, these values appear as the parameter defaults for [ServerIP] and [Path]. The default is the name of the switch—smartcell. If you change the switch name using **modify switchname,** the backup filenames are automatically adjusted to reflect this new switch name. You can back up directly to the /tftpboot directory or create a subdirectory under /tftpboot (for example, /back_dir). However, your backup file must exist under the /tftpboot directory or the sub-directory on the target end station. The backup file can be created with any name. Both the directory and file must have appropriate read and write permissions to complete the backup successfully.
restore switch	[ServerIP] <**serverip**> [Path] </**back_dir/backup_file**> Administrator	Restores the switch configuration from a prior backup. It requires an IP address, as well as the file name. As with **backup switch**, this command also requires TFTP protocol. The switch must be rebooted after **restore switch** for the new configuration to take effect.

Examples

```
switch_prompt # backup switch
ServerIP(1.1.1.200)                    : 1.1.1.200
Path(public/smartcell.ztr)              : /back_dir/cnfg_wk04
switch_prompt #

switch_prompt # restore switch
ServerIP()                              : 1.1.1.200
Path(/back_dir/cnfg_wk04)               :
Backup file is valid.
Restoring a backup file will completely replace any data stored in the flash.
Are you sure this is what you want to do?
Confirm(y/n)?: y
switch_prompt #
```

SwitchConfig

Use SwitchConfig to manage switch-related parameters, such as switchname and IP address.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[SwitchName]	Name of the switch.	1-19 characters	switch_1
[IPAddress]	IP address of Ethernet port on the switch.	Dot decimal/ 7-15 characters	10.0.0.1
[IPNetMask]	IP netmask of Ethernet port. Defaults to the appropriate netmask, based on IP address class. Calculated from the first two high bits of the IP address. Must be specified only if IP subnets are being used.	Dot decimal/ 7-15 characters	255.0.0.0, 255.255.0.0 or 255.255.255.0

Output Parameter	Description
[Switch Name]	Name of the switch. (Same as the [SwitchName] input parameter.
[IP Address]	IP address of the Ethernet port on the switch. (Same as the [IPAddress] input parameter.)
[IP Netmask]	IP netmask of the Ethernet port. (Same as the [IPNetMask] input parameter.)
[CPU MAC Address (Base)]	Base MAC (media access control) address for the TSM/CPU module. There are 128 addresses, starting at this base address. The first is used for the Ethernet port associated with the TSM/CPU.
[Chassis MAC Address (Base)]	Base MAC address for the SmartSwitch 6500 chassis.
[Power Mode]	Whether or not the switch is configured for a redundant power supply.

Output Parameter	Description
[Supply Installed]	Which power supply is installed.
[Supply ON]	Which power supply is ON.
[Number of TSM Boards]	Number of TSM modules installed in the chassis.
[ACTIVE CPU Model]	Model of the active CPU (up to 7 characters).
[ACTIVE CPU Speed]	Speed of the active CPU.
[ACTIVE CPU Board ID]	ID number of the active CPU board (1 character).
[ACTIVE CPU Board Rev]	Revision number of the active CPU board (1 character).
[ACTIVE CPU DRAM]	DRAM memory size of the active CPU (in megabytes; up to 4 characters).
[ACTIVE CPU Common DRAM]	Common DRAM memory size (in megabytes; up to 4 characters).
[Number of CSM Boards]	Number of CSM modules installed in the chassis.
[Cell Memory Size]	Total cell buffer size (k cells).
[Switch Software Type]	Type of switch software package (server).
[Software Version]	Version of the software (X.X).
[Build Date]	Software build date (day/month/date/hr:min:sec year).
[Software Image Size]	Binary image size (bytes).
[Heap Space Used/Total/%Free]	Total heap space used, total memory allocated to heap, and percent of free memory (bytes/bytes/%).

Descriptions

Operator	Parameters/Permissions	Description
modify switchconfig	[SwitchName] <**switchname**> [IPAddress] <**ipaddress**> [IPNetMask] <**ipnetmask**> Administrator	Runs automatically when you first configure the switch, then prompts you for the required input. Enter **modify switchconfig** if you want to change any of the above parameters after the initial switch configuration. Unless you are experienced with configuring IP subnets, it is recommended that you accept the IP netmask default.
show switchconfig	All	Displays hardware and software configuration information about the switch. It also includes auto-detect hardware configuration information, such as number of switch boards and memory, and software information such as the type and version. Any future hardware or software changes will be detected automatically when the switch is rebooted.

Examples

```
switch_prompt # modify switchconfig
SwitchName(switch_1)                  : switch_2
IPAddress(200.30.72.122)              : 1.1.1.202
IPNetMask(255.255.255.0)              : 255.255.255.128

switch_prompt #

switch_prompt # show switchconfig

Switch Configuration
================================================================================
Switch Name                           : Smart6500_1

IP Address                            : 206.61.237.22
IP Netmask                            : 255.255.255.0
CPU MAC Address (Base)                : 00:20:D4:28:C1:80
Chassis MAC Address (Base)            : 00:00:1D:A3:87:0B

Power Mode                            : Redundant
Supply Installed                      : 1 & 2
Supply ON                             : 1 & 2

Number of TSM Boards                  : 1
ACTIVE CPU Model                      : i960 HX
ACTIVE CPU Speed                      : 33 MHz
ACTIVE CPU Board ID                   : 12
ACTIVE CPU Board Rev                  : 7
ACTIVE CPU DRAM                       : 32 MB
ACTIVE CPU Common DRAM                : 32 MB

Number of CSM Boards                  : 1
Cell Memory Size                      : 29200 K cells

Switch Software Type                  : Server
Software Version                      : 02.02(21)-EQA
Build Date                            : Mon Aug 17 16:40:04 PDT 1998
Software Image Size                   : 5017856 bytes
Heap Space (Used/Total/%Free)         : 2301088/26706944/91.38%

switch_prompt #
```

SwitchName

Use SwitchName to change the name of the switch.

Operators

`modify`

Parameters

This attribute has no output parameters.

Input Parameter	Description	Value/Field Size	Default
[SwitchName]	Current name of the switch.	Up to 19 characters	switch_1

Descriptions

Operator	Parameters/Permissions	Description
`modify switchname`	`[SwitchName] <`**`newswitchname`**`>` Administrator	Changes the name you gave your switch. You can also change switchname using **`modify switchconfig`** if you want to change other switch features at the same time.

Examples

```
switch_prompt # modify switchname
SwitchName(switch_1): switch_2

switch_prompt #
```

SwitchTrafficCongestion

Use SwitchTrafficCongestion to manage global switch traffic congestion thresholds on the switch.

Operators

`modify, show`

Parameters

Parameter	Description	Value/Field Size	Default
[LowEPDWatermark	Threshold (in cells) used by the switch to trigger low EPD (early packet discard), EFCI, and backward RM (resource management) cell marking.	0-16383 or 0-32767, depending on memory size.	
[HighEPDWatermark]	Threshold (in cells) the switch uses to trigger high EPD.	0-16383 or 0-32767, depending on memory size.	
[CLP1_DiscardWatermark]	Threshold the switch uses to discard cells when the memory buffer is full.	0-16383 or 0-32767, depending on memory size.	
[RMCellMarkingEnable]	Indicates whether RM cell marking is enabled on the switch.	Disable, Enable	Disable
[ExplicitRateMarkingEnable]	Indicates whether explicit rate marking is enabled on the switch.	Disable, Enable	Disable
[EFCIMarkingEnable]	Indicates whether the EFCI cell is enabled on the switch.	Disable, Enable	Disable

Descriptions

Operator	Parameters/Permissions	Descriptions
modify switchtrafficcongestion	[LowEPDWatermark] <**lowepdwatermark**> [HighEPDWatermark] <**highepdwatermark**> [CLP1_DiscardWatermark] <**clp1_discardwatermark**> [RMCellMarkingEnable] <**rmcellmarkingenable**> [ExplicitRateMarkingEnable] <**explicitratemarkingenable**> [EFCIMarkingEnable] <**efcimarkingenable**> Administrator	Modifies the congestion control parameters for the switch.
show switchtrafficcongestion	All	Displays the current traffic congestion settings for the switch.

Examples

```
switch_prompt # modify switchtrafficcongestion
LowEPDWatermark(10922)                    :20971
HighEPDWatermark(21845)                   :10485
CLP1_DiscardWatermark(13072)              :13107
RMCellMarkingEnable(disable)              :
ExplicitRateMarkingEnable(disable)        :
EFCIMarkingEnable(disable)                :

switch_prompt #

switch_prompt # show switchtrafficcongestion

Switch Traffic Congestion Parameters
================================================================================
Low EPD Threshold                      : 20971 cells
High EPD Threshold                     : 10485 cells
Global Congestion Threshold            : 13107 cells
CLP1 Discard Threshold                 : 13107 cells
RM Cell Marking Enable                 : OFF
EFCI Cell Marking Enable               : OFF
Explicit Rate Marking Enable           : OFF

switch_prompt #
```

TrafficDescriptor

Use TrafficDescriptor to manage traffic types.

Operators

`add, delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[TrafficType]	Service category supported.	CBR, UBR, RTVBR, NRTVBR, ABR	UBR
[TrafficDescriptorType]	Traffic descriptor type.	Seven possible combinations, represented by any of the following numbers: 2-7 or 11. PeakCellRate CLP0+1 (2) PeakCellRate CLP0+1, PeakCellRate CLP0 (3) PeakCellRate CLP0+1, PeakCellRate CLP0, Tag CLP = 1 (4) PeakCellRate CLP0+1, SustCellRate CLP0+1, MaxBurstSize CLP0+1(5) PeakCellRate CLP0+1, SustCellRate CLP0, MaxBurstSize CLP0 (6) PeakCellRate CLP0+1, SustCellRate CLP0, MaxBurstSize CLP0, Tag CLP = 1(7) BestEffort (11)	2
[TrafficDescriptorIndex]	Unique identifier for each traffic descriptor. Use **`show trafficde-scriptor`** to get index numbers.	Positive integer	No default
[PCRCLP0+1]	Peak cell rate CLP = 0+1 (KiloBits per second).	Zero or positive integer	100
[PCRCLP0]	Peak cell rate CLP = 0 (KiloBits per second).	Zero or positive integer	0
[SCRCLP0+1]	Sustainable cell rate CLP = 0+1 (KiloBits per second).	Zero or positive integer	0

Input Parameter	Description	Value/Field Size	Default
[SCRCLP0]	Sustainable cell rate CLP = 0 (KiloBits per second).	Zero or positive integer	0
[MBSCLP0+1]	Maximum burst size CLP = 0+1 (KiloBits).	Zero or positive integer	0
[MBSCLP0]	Maximum burst size CLP = 0 (KiloBits).	Zero or positive integer	0
[QOSClass]	QOS class.	Any of the following numbers: 0, 1, 2, 3, 4, 5 Unspecified (0) Class1 (1) Class2 (2) Class3 (3) Class4 (4) Class5 (5)	1
[AALType]	ATM adaptation layer type.	Any of the following numbers: 1, 2, 3, 5, 16 AAL1 (1) AAL2 (2) AAL3/4 (3) AAL5 (5) Unspecified (16)	5

Output Parameter	Description
[TD#]	Unique identifier for each traffic descriptor. (Same as the [TrafficDescriptorIndex] input parameter.)
[Traff Type]	Service category supported. (Same as the [TrafficType] input parameter.) Possible values are: CBR, UBR, RTVBR, NRTVBR, or ABR.
[Desc Type]	Traffic descriptor type. (Same as the [TrafficDescriptorType] input parameter.) Possible values are: 2 (PeakCellRate CLP0+1), 3 (PeakCellRate CLP0+1, PeakCellRate CLP0), 4 (PeakCellRate CLP0+1,PeakCellRate CLP0, Tag CLP = 1), 5 (PeakCellRate CLP0+1, SustCellRate CLP0+1, MaxBurstSize CLP0+1), 6 (PeakCellRate CLP0+1, SustCellRate CLP0, MaxBurstSize CLP0), 7 (PeakCellRate CLP0+1, SustCellRate CLP0, MaxBurstSize CLP0, Tag CLP = 1), or 11 (BestEffort).

Output Parameter	Description
[Qos]	Quality of service class. (Same as the [QOSClass] input parameter.) Possible values are 0 (Unspecified), 1 (Class 1), 2 (Class 2), 3 (Class 3), or 4 (Class 4).
[Peak Cell Rate CLP_0]	Peak cell rate CLP=0 (in kilobits per second).
[Peak Cell Rate CLP_0+1]	Peak cell rate CLP=0+1 (in kilobits per second).
[Sust Cell Rate CLP_0]	Sustainable cell rate CLP=0 (in kilobits per second).
[Sust Cell Rate CLP_0+1]	Sustainable cell rate CLP=0+1 (in kilobits per second).
[Max Burst Size CLP_0]	Maximum burst size CLP=0 (in kilobits per second).
[Max Burst Size CLP_0+1]	Maximum burst size CLP=0+1 (in kilobits per second).
[Aal Type]	ATM adaption layer type. (Same as the [AALTYPE] input parameter.) Possible values are: 1 (AAL1), 2 (AAL2), 3 (AAL3), 4 (AAL3/4), 5 (AAL5), 16 (Unspecified).

Descriptions

Operator	Parameters / Permissions	Description
add trafficdescriptor	[TrafficType] **<trafficctype>** [TrafficDescriptorType] **<trafficdesctype>** [PCRCLP01] **<pcrclp01>** [PCRCLP0] **<pcrclp0>** [SCRCLP01] **<scrclp01>** [SCRCLP0] **<scrclp0>** [MBSCLP01] **<mbsclp01>** [MBSCLP0] **<mbsclp0>** [QOSCLASS] **<qosclass>** [AALTYPE] **<aaltype>** Administrator	Creates a new traffic descriptor.
delete trafficdescriptor	[TrafficDescriptorIndex] **<trafficdescriptorindex>** Administrator	Deletes a traffic descriptor.
show trafficdescriptor	Administrator	Shows traffic descriptors.

Examples

```
switch_prompt # add trafficdescriptor

Executing this command : add TrafficDescriptor
TrafficType(UBR)                          : CBR
TrafficDescriptorType(2)                  : 2
PCRCLP01(100)                             : 200
PCRCLP0(0)                                : 200
SCRCLP01(0)                               : 200
SCRCLP0(0)                                : 200
MBSCLP01(0)                               : 200
MBSCLP0(0)                                : 200
QOSCLASS(1)                               : 1
AALTYPE(5)                                : 5
switch_prompt #

switch_prompt # delete trafficdescriptor

Executing this command : delete TrafficDescriptor
TrafficDescriptorIndex()                 :1
switch_prompt #
```

```
switch_prompt # show trafficdescriptor

Executing this command : show TrafficDescriptor

================================================================================
TD#  Traff    Desc    QoS   Peak Cell Rate   Sust Cell Rate   Max Burst Size   Aal
      Type     Type            (Kb/s)          (Kb/s)             (Kb)       Type
                             CLP_0  CLP_0+1    CLP_0  CLP_0+1    CLP_0  CLP_0+1
================================================================================
1     CBR      2      1      0      100        0       0        0       0       5
2     CBR      3      1      200    200        0       0        0       0       5

switch_prompt #
```

TrapCommunity

Use TrapCommunity to manage the list of hosts that the switch sends trap notifications to concerning significant events. Each trap community has a name, IP address, and port number. The trap community name and address combination must be unique.

Operators

`add, delete, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[Name]	Name of the trap community.	64 characters	No default
[IPAddr]	IP address of the host to which traps are sent.	Dot decimal/ 15 characters	No default
[Port]	Host port number to which traps are sent.	0-65535	162

Output Parameter	Description
[TrapCommunityName]	Name of the trap community. (Same as the [Name] input parameter.)
[IP Address]	IP address of the host to which traps are sent. (Same as the [IPAddr] input parameter.)
[Port]	Host port number to which traps are sent.

Descriptions

Operator	Parameters/Permissions	Descriptions
add trapcommunity	[Name] <**name**> [IPAddr] <**ipaddress**> [Port] <**portnumber**> Administrator	Creates a trap community entry on the switch.
delete trapcommunity	[Name] <**name**> [IPAddr] <**ipaddress**> Administrator	Removes an existing trap community from the switch.
show trapcommunity	All	Displays all trap communities configured on the switch.

Examples

```
switch_prompt # add trapcommunity
Name()                                  : boris
IpAddr()                                : 204.95.77.148
Port (162)                              : 100
switch_prompt #

switch_prompt # show trapcommunity

TrapCommunity Name                  IP Address           Port
================================================================================
trapcomm                           204.95.77.147         162
boris                              204.95.77.148         100
switch_prompt #

switch_prompt # delete trapcommunity
Name()                                  : boris
IpAddr()                                : 204.95.77.148
switch_prompt #

switch_prompt # show trapcommunity

TrapCommunity Name                  IP Address           Port
================================================================================
trapcomm                           204.95.77.147         162
switch_prompt #
```

TrustedNMS

Use TrustedNMS to configure a trusted network management system (NMS) on the switch. The trusted NMS is identified by its IP address. The trusted network management system is the only NMS allowed to perform critical operations such as:

- Backup or restore a switch configuration
- Add trap destinations for another NMS
- Download switch software (switch operating system, boot load image, or POST)

When SNMP is used, the IP address of the requesting station is checked against the trusted NMS address as a method of switch security. There can be only one trusted NMS configured on a switch.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[IPAddr]	IP address of the authorized NMS.	Dot decimal/ 15 characters	0.0.0.0

Output Parameter	Description
[Trusted NMS IP-Address]	IP address of the authorized NMS. (Same as [IPAddr] Input Parameter.)

Descriptions

Operator	Parameters/Permissions	Description
`modify trustednms`	`[IPAddr] <`**`ipaddr`**`>` Administrator	Configures the switch to treat a particular host IP address as a trusted NMS.
`show trustednms`	Administrator	Displays the currently configured IP address of the host that is treated as the trusted NMS. If trusted NMS is not configured, it will display 0.0.0.0.

Examples

```
switch_prompt # modify trustednms
IpAddr(0.0.0.0)                                 : 90.1.1.1
Trusted NMS IP-Address : 90.1.1.1
switch_prompt #

switch_prompt # show trustednms
Trusted NMS IP-Address : 90.1.1.1
switch_prompt #
```

VCCMask

Use VCCMask to manage the combination of VPI (virtual path identifier) bit and VCI (virtual channel identifier) bit settings. There are only four different VCC mask entries allowed by the switch and the VPI and VCI shift must total 12.

Operators

`modify, show`

Parameters

Input Parameter	Description	Value/Field Size	Default
[MaskIndex]	Index of mask to be changed.	0-3	0
[VpiShift]	Number of bits assigned for use by the VPI.	0-12	0
[VciShift]	Number of bits assigned for use by the VCI.	0-12	0

Output Parameter	Description
[MaskIndex]	Index of the mask to be changed.
[Vpi Bits]	Number of bits assigned for use by the VPI. (Same as the [VpiShift]input parameter.)
[Vci Bits]	Number of bits assigned for use by the VCI. (Same as the [VciShift] input parameter.)

Descriptions

Operator	Parameters/Permissions	Description
modify vccmask	[MaskIndex] <**maskindex**> [VpiShift] <**vpishift**> [VciShift] <**vcishift**> Administrator	Modifies the proportion of bits assigned to the VPI and VCI for a given VCC or VPI/VCI set. The combined total of VPI and VCI bits must equal 12. The four most common VCC masks are predefined in the system (see **modify portconfig**). When modifying a VPI/VCI set, you must specify the VCC mask by using the mask index identifier. If you modify a specific mask index, for example a VPI/VCI set is modified from 6/6 to 7/5, you will modify occurrences of the 6/6 configuration on all ports, as only four different VCC masks configurations can exist at any one time.
show vccmask	All	Displays the four VPI/VCI sets currently defined in the system as VCC masks.

Examples

```
switch_prompt # show vccmask

MaskIndex   Vpi Bits     Vci Bits

================================================================================
  0         0           12
  1         2           10
  2         4           8
  3         6           6

switch_prompt # set vccmask
MaskIndex(0)                              : 0
VPIShift(0)                               : 3
VCIShift(0)                               : 9

switch_prompt # show vccmask

MaskIndex   Vpi Bits     Vci Bits

================================================================================
  0         3           9
  1         2           10
  2         4           8
  3         6           6

switch_prompt #
```

VlanMcast

Use VlanMcast to display multicast group MAC addresses served by a VLAN.

Operators

show

Parameters

Input Parameter	Description	Value/Field Size	Default
[ELANNumber]	ELAN number associated with the multicast group.	0-125	No default

Output Parameter	Description
[Mcastid]	BUS identification for the multicast group. Range is 2-64.
[Group MAC Address]	Multicast group MAC address.
[Distribute VPI/VCI]	Selective multicast forward VC established by the server.

Descriptions

Operator	Parameters/Permissions	Description
show vlanmcast	[ELANNumber] **<elannumber>** Administrator	Displays multicast group MAC addresses served by a VLAN.

Examples

```
switch_prompt # show vlanmcast 0

MULTICAST ENTRIES  for VLAN : 0
-----------------------------------

McastId                     : 2
Group MAC Address           : 01:80:C2:00:00:00
Distribute VPI/VCI          : 0/62

switch_prompt #
```

3 BOOT LOAD COMMANDS

This chapter describes the low-level boot load commands. Boot load commands are used for setting switch start-up behavior and for performing software downloads. Use the boot load commands to:

- Set which copy of the boot load software is the default copy
- Clear all configurations stored within the flash file system
- Check boot load software version numbers
- Load switch software upgrades
- Set whether power on system tests (POST) are run by default

Note For detailed information on using the boot load Commands, see your product's SmartSwitch User Guide.

Caution The commands described in this section are intended to be used only for loading upgrade software or to reinstall software that has become corrupt.

Accessing the Boot Load Commands

Boot load commands are executed from the boot load prompt. The boot load prompt is not part of the switch console, and is accessible only after a reboot and before the switch software is loaded. Perform the following steps to gain access to the boot load prompt:

1. Connect a terminal (or PC running terminal emulation software) to the RJ-45 terminal port on the front of the SmartSwitch 6500.
2. Login as administrator.
3. Enter the **`reboot`** command from the terminal.
4. Wait for the following message to appear:

```
Press any key to exit to boot load prompt. .
07
```

5. Before the countdown reaches zero, press a key to access the boot load prompt. Notice that the boot load prompt (**`=>`**) differs from the prompt used in the switch console.

chpi Command

Use **chpi** to set one of the two boot load software images as the default. Unless otherwise specified within the initial reboot countdown, the default boot load software image is the image that is loaded into DRAM and executed.

Parameter	Explanation
0	Set boot load software image stored in area 0 of the boot PROM as the default image.
1	Set boot load software image stored in area 1 of the boot PROM as the default image.

Example

Set the boot load software image in boot PROM location 1 as the default image.

```
=>chpi 1
Modifying Default value for Boot Load Software,
please wait...
New default Boot Load Software value programmed
successfully.
New Default Boot Load Software value: 1
=>
```

clfs Command

Use **clfs** to clear the switch flash file system. The **clfs** command clears all VLAN and ELAN configurations, route definitions, port settings, and PVC configurations. **clfs** also clears all IP addresses, including the IP address for the switch Ethernet interface.

Example

```
=>clfs
Clearing Flash File System, please wait...
Successfully cleared Flash File System
=>
```

Note After you return to the switch console (exit the boot prompt) following **clfs**, a series of messages appears at the console ending with the **password:** prompt. At the **password:** prompt, login using the default password. Next, enter **clear config** to reinitialize the flash file system and reboot again to enable normal switch operation.

dcfg Command

Use **dcfg** to display information about the current boot PROM configuration

- Revision numbers of both boot load software images
- Display the switch MAC address
- Number (in hexadecimal) of contiguous MAC addresses after the base MAC address
- Show whether POST is on or off

Example

```
=>dcfg
Default Boot Load Software: 0
Boot Load Software0 Rev Number =    1
Boot Load Software1 Rev Number =    1
MAC address: 0 20 d4 14 85 0
Number of contiguous MAC addresses, starting at this base: 80
POST OFF
=>
```

df Command

Use **df** (download firmware) to download software images from a TFTP/Bootp server to the flash RAM of the switch.

Note Be sure the location and names of the image files are known to the TFTP/Bootp server to allow the server to automatically download the files to the switch.

The **df** command uses three parameters: **b**, **s**, and **p**. These parameters specify which software component to download.

Parameter	Explanation
b	Download the boot load image into boot PROM. The boot PROM contains two boot load images (one is a backup copy). The **df b** command always downloads over the boot load image that is not currently running.
s	Download the switch operating software into flash RAM.
p	Download POST diagnostics into flash RAM.
none	Same as **s**, downloads switch operating software into flash RAM.

Examples

```
=>df s
You've requested a Switch Software download
Are you sure?(Y/N)y
Initializing ethernet...
Starting Bootp...
   Boot file: c:\tftpboot\switch.ima
Using TFTP to get bootfile "c:\tftpboot\switch.ima" .
.....................................................................
.....................................................................
.....................................................................
.........................

.........................
.....................................................................
.....................................................................
.......................................
Validity checks of the Switch Software Downloaded file...
All Validity checks OK
Programming downloaded image into Switch Software section, please wait...
New Switch Software programmed successfully
=>
```

go Command

Use the **go** command to exit the boot load prompt and run switch software (with or without POST).

Parameter	Explanation
s	Bypass POST and go directly to switch software.
p	Run POST, and then run switch software.
none	Same as **s**; bypass POST and go directly to switch software.

Examples

```
=>go s
Bypassing POST
Verifying Checksum of Switch Software...
Attaching network interface ei0... done.
Attaching network interface lo0... done.
0xe054f600 (tRootTask): flashFsLib: Initialized
Initializing Flash File-System
Initializing System
Initializing Hardware
Initializing Alarms, Logging and Tracing
Initializing ILMI
Initializing PM
Initializing Link Daemon
Initializing LANE Servers
NOTICE - 'ZLESSRV' ***** LES started *****
NOTICE - 'tZLinkStatus' Port A1      (1) UP
NOTICE - 'tZLinkStatus' Port A2      (2) UP
Initializing LANE & IP/ATM Client
NOTICE - 'tZLinkStatus' Port C1      (9) DOWN
Initializing Watchdog Timer
After ZKickWatchDog
Console task ID : 0xe04c4cb0
SmartSwitch Command Console
SmartSwitch Version 02.02(31) (c) Cabletron Systems Inc.
password:
```

he Command

Use **he** to get help on boot load commands or show list of all boot load commands. The question mark (**?**) can be entered in place of **he**.

Parameter	Explanation
[<command>]	Explain designated boot load command.
none	Show list of all boot load commands.

Examples

```
=>he chpi
chpi [option]
  option: 0 ..changes the Boot Load default to be Boot Load Software0;
          1 ..changes the Boot Load default to be Boot Load Software1
  Changes Boot Load default to be Boot Load Software (0) or (1)
```

ponf Command

Use **ponf** to set whether POST diagnostics are run by default when the switch is started.

Parameter	Explanation
s	POST is off. Switch goes directly to start-up.
p	POST is on. Switch runs POST before going to switch operating software.
none	Same as **s**; POST is off.

Examples

```
=>ponf p
Modifying Control/Stat field to execute POST, please wait...
New postOnOff value programmed successfully into Control/Stat field.
=>
```

Note **ponf** does not affect the behavior of the **go** command.

scsm Command

Use **scsm** to tell the switch to transfer CSM mastership to the slave CSM.

Examples

```
=>scsm
Transferring mastership to slave CSM...

=>
```

swms Command

Use **swms** to tell the switch to transfer TSM/CPU mastership to the redundant CPU/TSM.

Examples

```
=>swms
Transferring mastership to slave TSM/CPU...

=>
```

APPENDIX A ACRONYMS

A

AAL	ATM Adaptation Layer
AAL1	ATM Adaptation Layer Type 1
AAL2	ATM Adapter Layer Type 2
AAL3/4	ATM Adapter Layer Type 3/4
AAL5	ATM Adapter Layer Type 5
AALM	ATM Adaptation Layer Mux
ABR	Available Bit Rate
AFI	Authority and Format Identifier
ANSI	American National Standards Institute
API	Application Programming Interface
ARP	Address Resolution Protocol
ASCII	American Standard Code for Information Interchange
ATM	Asynchronous Transfer Mode
A_VCR	Available Cell Rate

B

BE	Bridged Ethernet
BER	Bit Error Ratio (Rate)
B-ICI	Broadband Inter-Carrier Interface
B-ISDN	Broadband Integrated Services Digital Network

BOOTP Boot Protocol

BUS Broadcast and Unknown Server

C

CAC Call Admission Control

CAN Campus Area Network

CAT-3 Category 3 unshielded twisted pair cable

CAT-5 Category 5 unshielded twisted pair cable

CBR Constant Bit Rate

CCITT Comite Consultatif Internationale de Telegraphique et Telephonique (Consultative Committee on International Telegraphy and Telephony)

CCR Current Cell Rate

CDV Cell Delay Variation

CER Cell Error Ratio

CES Circuit Emulation Service

CI Congestion Indicator

CLP Cell Loss Priority

CLR Cell Loss Ratio

CMIP Common Management Information Protocol

COM Communication

COS Class of Service

CPE Customer Premise Equipment

CPU Central Processing Unit

CRC Cyclic Redundancy Check

CRS Cell Relay Service

CS Convergence Sublayer

CTD Cell Transfer Delay

D

DCC Digital Cross Connect, generic DACS or Direct Connect Card, data interface module

DF Download Flash

DS-0 Digital Signaling 0

DS-1 Digital Signaling 1

DS-3 Digital Signaling 3

DTE Data Terminal Equipment

DVT Delay Variation Tolerance

E

E-1 European standard for digital transmission service at 2 Mb/s.

E-3 European standard for digital transmission service at 34.4 Mb/s (transports 16 E1 circuits)

E-NET Ethernet

EFCI Explicit Forward Congestion Indicator

EISA Extended Industry Standard Architecture

ELAN Emulated Local Area Network

EMI Electro-Magnetic Interference

ENR Enterprise Network Roundtable

EOF End of Frame

EPD Early Packet Discard

EPROM Erasable Programmable Read-Only Memory

ESD Electro-Static Device

ESI End System Identifier

ESM Expansion Switch Module

F

FCS Frame Check Sequence

FIFO First In First Out

FTP File Transfer Protocol

G

GB/S Gigabits per second

GCRA Generic Cell Rate Algorithm

GFC Generic Flow Control

H

HEC Header Error Check

I

IEEE Institute of Electrical and Electronic Engineers

ICMP Internet Control Message Protocol

ID Identification Number

IE	Information Element
IETF	Internet Engineering Task Force
IISP	Interim Inter-Switch Signaling Protocol
ILMI	Integrated Local Management Interface
I/O	Input/Output
IOM	Input/Output Module
IP	Internet Protocol
IP/ATM	Internet Protocol over ATM
IPX	Internetwork Packet Exchange protocol
ITU-TSS	International Telecommunications Union-Telecommunications Standards Sector
ISDN	Integrated Service Digital Network

J

JPEG	Joint Photographic Experts Group

K

KB/S	Kilobits per second

L

LAN	Local Area Network
LANE	LAN Emulation
LE	LAN Emulation

LE-ARP	LAN Emulation-Address Resolution Protocol
LEC	LANE Client
LECS	LAN Emulation Configuration Server
LECSELAN	LAN Emulation Configuration Server Emulated LAN
LES	LANE Server
LESELAN	LANE Server Emulated LAN
LIS	Logical IP Subnetwork
LLC	Logical Link Control
LMI	Local Management Interface

M

MAC	Media Access Control
MAN	Metropolitan Area Network
MB/S	Megabits per second
MBS	Maximum Burst Size
MCR	Minimum Cell Rate
MIB	Management Information Base
MMF	Multi-Mode Fiber
MP	Multi-Point
MSM	Main Switch Module
MTU	Maximum Transfer Unit

N

NAKS	Negative Acknowledges
NDIS	Network Driver Interface Specification
NETBEUI	NetBIOS Extension User Interface
NFS	Network File System
NIC	Network Interface Controller/Card
NLS	Natural Language Syntax
NMS	Network Management System
NNI	Network Node Interface or Network-to-Network Interface
NRT-VBR	Non Real Time - Variable Bit Rate
NRZ	Non-Return to Zero
NSAP	Network Services Access Point

O

OAM	Operations and Maintenance
OAM&P	Operations, Administration, Maintenance and Provisioning
OC-1	Optical Carrier 1
OC-N	Optical Carrier n (where "n" is an integer)
ODI	Open Data-link Interface
OOB	Out of Band
OSI	Open Systems Interconnection

P

PC	Personal Computer
PC	Priority Control
PCI	Peripheral Component Interconnect
PCR	Peak Cell Rate
PDU	Protocol Data Unit
PMD	Physical Media Dependent Sub-layer
PMP	Point-to-Multipoint
P-NNI	Private Network Node Interface or Private Network-to-Network Interface
PPD	Partial Packet Discard
PROM	Programmable Read-Only Memory
PTI	Payload Type Indicator
PTP	Point-to-Point
PVC	Permanent or Provisioned Virtual Circuit

Q

QOS	Quality of Service
QSAAL	Q-Signaling ATM Adaptation Layer. (Q represents the Q-series of the ITU-T (International Telecommunications Union).

R

R	Read-Only Access
RAM	Random Access Memory

RCR Raw Cell Received

RD Receive Deactivated

RFC Request for Comment

RM Resource Management

RMA Return Merchandise Authorization

RQU Receive Queue Underrun

RS-# Recommended Standard defined by Electronic Industries Association

RT-VBR Real Time - Variable Bit Rate

RW Read-Write Access

S

SAAL Signaling ATM Adaptation Layer

SAR Segmentation And Reassembly

SAR-PDU SAR Protocol Data Unit

SBE System Bus Error

SCR Sustainable Cell Rate

SDH Synchronous Digital Hierarchy

SEAL Simple Efficient Adaptation Layer

SMF Single Mode Fiber

SMDS Switched Multimegabit Data Service

SNMP Simple Network Management Protocol

SONET Synchronous Optical Network

STM-1 Synchronous Transport Module 1

STM-N Synchronous Transport Module n (where ‘n' is an integer)

STM-NC Synchronous Transport Module n - concatenated (where ‘n' is an integer)

STP Shielded Twisted Pair

STS-1 Synchronous Transport Signal 1

STS-N Synchronous Transport Signal n (where ‘n' is an integer)

STS-NC Synchronous Transport Signal n - concatenated (where ‘n' is an integer)

SVC Switched Virtual Circuit

T

T-1 Transmission System 1

T-3 Transmission System 3

TAXI Transparent Asynchronous Transmitter/Receiver Interface

TCP Transmission Control Protocol

TD Traffic Descriptor

TDM Time-Division Multiplexing

TFTP Trivial File Transfer Protocol

TLV Type, Length and Value

U

UBR Unspecified Bit Rate

UME UNI Management Entity

UNI User-Network Interface

UP Unnumbered Poll

UPC Usage Parameter Control

UTOPIA Universal Test and Operations Physical Interface for ATM

UTP Unshielded Twisted Pair

V

VBR/RT	Variable Bit Rate/Real Time
VBR/NRT	Variable Bit Rate/Non-real Time
VC	Virtual Circuit
VCC	Virtual Channel Connection
VCI	Virtual Channel Identifier
VCL	Virtual Channel Link
VLAN	Virtual LAN
VP	Virtual Path
VPC	Virtual Path Connection
VPI	Virtual Path Identifier
VPN	Virtual Private Network

W

WAN	Wide Area Network

APPENDIX B EVENT/ALARM MESSAGES

The SmartSwitch 6500 records and reports its operation in real-time using events and alarms. An event is the occurrence of a significant activity. Examples of events are a port going down or a client joining an ELAN. Alarms are a specific class of events defined as “those events that the user needs to know about or attend to right away.” Alarms do not always indicate switch faults; for example, an alarm might indicate simply “LECS is operational.” Notice also that some switch activities are reported both as events and alarms.

Event and alarm messages are saved in circular memory buffers. When the buffers are full, older events and alarms are overwritten by newer entries. Events are stored in shared RAM, while alarms are stored in flash RAM. That means alarms are persistent between reboots of the SmartSwitch 6500, while events are not.

Event and alarm buffers are called the event and alarm logs. In addition to viewing the messages in the logs, you can enable/disable automatic display of messages at the switch console.

Note Depending on the activity of your SmartSwitch 6500, the console may be flooded with event messages. Cabletron recommends that you enable the automatic display of event messages for troubleshooting purposes only.

The following table lists switch commands used to manipulate log messages.

Table B-1 Event and Alarm Commands

Command	Description
show events	Displays the events currently logged.
modify eventdisplay	Enables/disables the automatic display of event messages on the console screen.
show alarms	Displays the alarms currently logged.
modify alarmdisplay	Enables/disables the automatic display of alarm messages on the console screen.

Following is an example of the console display following a **`show events`** command:

```
0  33554474  MAJOR EVENT        000:00:21:641
-------------------------------------------------
LES ReadServerConfig:  Unable to open config file les.db

1  117571585  MINOR EVENT        000:00:23:502
-------------------------------------------------
SAAL connection has become active, initiated locally
Port ID 0x00000002
Protocol 0x02

2  33554656  MINOR EVENT        000:00:35:359
-------------------------------------------------
Sendto failed for IP address 206.61.231.153
```

The display provides the following information:

- Message index number — Display sequence number assigned by the console.
- Event ID — Unique ID assigned to each event type at the factory.
- Message Text — Description of the event.
- Severity — Whether the event is critical, major, minor, or informational (Table B-2).
- Time — Time the event occurred, with respect to switch up-time in hours, minutes, seconds, and milliseconds.

Table B-2 Event Severity

Command	Description
Critical	Impacts the entire switch, leaving the system unavailable or in a degraded state.
Major	Impacts a feature of the switch, leaving the feature unavailable or in a degraded state.
Minor	Impacts the system or feature, leaving it in a sub-optimal state.
Informational	An occurrence of an activity that the user knows about.

Following is an example of the console display following a **`show alarms`** command:

```
switch_prompt # show alarms
Index(ALL)                              :
0  33554652  000:00:32:238
-------------------------------------------------
LECS Operational
```

The display provides the following information:

- Message index number — Display sequence number assigned by the console.
- Alarm ID — Same as event ID, described above.
- Message Text — Description of the alarm.
- Time — Time the alarm occurred, with respect to switch up-time in hours, minutes, seconds, and milliseconds.

Note For a switch activity that is reported both as an alarm and an event, the ID, message text and time are identical in the event and alarm messages.

The event ID is an 8 or 9-digit decimal number that allows you to identify the source of the event or alarm. The first five or six digits indicate the software module associated with the switch activity. The remaining digits identify the specific type of activity. Table B-3 lists each software module and its prefix(es).

Table B-3 Event ID Prefixes

Module	Description
System	Implements LAN emulation (LANE) and PVC, port, and memory management.
PNNI	Implements call routing per PNNI protocol.
Call Control	Implements SVC call control.
Signaling	Implements SVC call signaling.
ILMI	Implements management per ILMI protocol.

For example, the following event originates from the signaling module.

```
1  117571585  MINOR EVENT        000:00:23:502
-------------------------------------------------
SAAL connection has become active, initiated locally
Port ID 0x00000002
Protocol 0x02
```

Note A complete list of event and alarm messages is beyond the scope of this manual. If a recovery action is not apparent from the message text (or context in which the switch activity occurred), contact your Cabletron representative for assistance.

APPENDIX C TECHNICAL SUPPORT

This appendix tells you what to do if you need technical support for your SmartSwitch 6500.

Cabletron offers several support and service programs that provide high-quality support to our customers. For technical support, first contact your place of purchase. If you need additional assistance, contact Cabletron Systems, Inc. There are several easy ways to reach Cabletron Customer Support and Service.

Telephone Assistance

Our Technical Support Center is available Monday through Friday, 8am to 8pm Eastern Time, by calling 603-332-9400.

FAX Service

You can fax support questions to us any time at 603-337-3075.

Electronic Services

You can contact Cabletron's Bulletin Board Service by dialing 603-335-3358.

Our internet account can be reached at support@ctron.com.

You can also check our home pages on the World Wide Web.

- http://www.Cabletron.com
- http://www.ctron.com

Placing A Support Call

To expedite your inquiry, please provide the following information:

- Your Name
- Your Company Name
- Address
- Email Address
- Phone Number
- FAX Number

- Detailed description of the issue (including history, what you've tried, and conditions under which you see this occur)
- Hardware model number, software version, and switch configuration (that is, what part types are in what slots)

Hardware Warranty

Cabletron warrants its products against defects in the physical product for one year from the date of receipt by the end user (as shown by Proof of Purchase). A product that is determined to be defective should be returned to the place of purchase. For more detailed warranty information, please consult the Product Warranty Statement received with your product.

Software Warranty

Cabletron software products carry a 90-day software warranty. During this period, customers may receive updates and patches for verified, reported software issues.

Repair Services

Cabletron offers an out-of-warranty repair service for all our products at our Santa Clara Repair Facility. Products returned for repair will be repaired and returned within 5 working days. A product sent directly to Cabletron Systems, Inc. for repair must first be assigned a Return Material Authorization (RMA) number. A product sent to Cabletron Systems, Inc., without an RMA number displayed outside the box will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, contact the Cabletron Technical Support. When you call for an RMA number, your support representative will spend a few minutes with you, making sure the board is defective. Once they confirm the board is defective, they will assign an RMA number. Payment, shipping instructions, and turnaround time will be confirmed when the RMA number is assigned.

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